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mentors & muses

Society for Technical Communication

What is a technical communicator? Technical communicators develop and design instructional and informational tools needed to ensure safe, appropriate, and effective use of science and technology, intellectual property, and manufactured products and services. Technical communicators combine multimedia knowledge and strong communication skills with technical expertise to provide education across the entire spectrum of users' abilities, technical experience, and visual and auditory capabilities. For more information visit www.stc.org/about-stc/defining-technical-communication.

The Society for Technical Communication is the largest association of technical communicators in the world. STC is currently classifying the Body of Knowledge for the field and communicating the value of technical communication. Its volunteer leadership continues to work with government bodies and standards organizations to increase awareness and accurate perception of technical communication. Membership is open to all with an interest in technical communication. Visit the STC website (www.stc.org) for details on membership categories, fees, and benefits.

Technical
COMMUNICATION

MAY 2020

Journal of the Society for Technical Communication

INSTRUCTIONS FOR AUTHORS

About the Journal

Technical Communication is a peer-reviewed, quarterly journal published by the Society for Technical Communication (STC). It is aimed at an audience of technical communication practitioners and academics. The journal's goal is to contribute to the body of knowledge of the field of technical communication from a multidisciplinary perspective, with special emphasis on the combination of academic rigor and practical relevance.

Technical Communication publishes articles in five categories:

- Applied research – reports of practically relevant (empirical or analytical) research
- Applied theory – original contributions to technical communication theory
- Case history – reports on solutions to technical communication problems
- Tutorial – instructions on processes or procedures that respond to new developments, insights, laws, standards, requirements, or technologies
- Bibliography – reviews of relevant research or bibliographic essays

The purpose of Technical Communication is to inform, not impress. Write in a clear, informal style, avoiding jargon and acronyms. Use the first person and active voice. Avoid language that might be considered sexist, and write with the journal's international audience in mind.

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Mentors and Muses

Every research project has its sources of inspiration, almost always in the lived experience of its author or authors. The luckiest of scholars, however, also have mentors or muses: that is, individuals in the field who advise or guide the scholar through one or more stages of a research project. This could be, for example, a prominent and prolific researcher who delivers a stirring presentation at a conference and encourages you to initiate study of a related topic, or a wise friend who engages in a series of e-mail exchanges with you or ongoing conversations about your project, or a conscientious colleague who offers comments on the earliest versions of your manuscript. Their impact on the final published project might be briefly cited in acknowledgments, but the nature and scope of this influence is typically invisible.

At my invitation, however, the authors of the five manuscripts in this issue of *Technical Communication* were all willing to discuss the influence of their mentors and muses. Their comments make it immediately evident that the influence of mentors and muses is as unique as the resulting manuscripts.

"A Study of the Websites of the 42 Double First-class Chinese Universities: How Does Confucianism Influence the Content on Chinese University Websites?" by Daniel Ding examines how the values of *ren*, *yi*, and *li* (i.e., kindness, righteousness, and proper behavior) guide the design of university homepages in ways that might not be readily

apparent, especially to American and European viewers. Daniel focuses on five topics: political/national agendas, history and tradition, important people, groups of people, and views of campus. This content analysis, conducted in three visits to each website during three consecutive months, indicates that Confucian ideas about human relationships constitute a vigorous influence on the design of university websites in China. Daniel finds that developers consistently adopt words and images that emphasize support of collectivism, deference to leaders, appreciation of history and tradition, and admiration for public infrastructure (buildings, walls, gates, gardens).

As Daniel explains, this article started with a series of conversations:

> In 2008, while I was on a sabbatical at one of China's 42 Double First-class Universities—Zhengzhou University, I had a conversation with some Chinese professors of English for Specific Purposes who observed my class of advanced technical communication. I was teaching page design that day, so our conversation started with their questions on page design and then it moved on to a discussion about developing websites. One of the professors observed that Chinese websites unusually displayed much more information than Western websites. He gave me two examples: the website

of Zhengzhou University and that of the University of Kansas where he had studied for 6 months. He further explained that the homepage of the UK website had only 15 clickable buttons and barely any detailed information on that page. It worked like a table of contents, simple and concise, whereas the homepage of ZU had many more clickable buttons and carried much more information, so much so that the Chinese professor himself was often not sure where to begin to browse.

> The professor's comments on the differences between Chinese and Western websites inspired me to begin the research project. Initially, I wanted to compare and contrast 50 Chinese universities and 50 American universities, but after I began to collect data, I realized that there was too much information to deal with, so I quit in late 2009.

> In 2014, I was invited back to Zhengzhou University to give a lecture on culture and technical communication. I met with the professor again. He asked me about the research project; he thought I must have finished it.

I told him that I quit because it was simply overwhelming. He encouraged me to finish the research project, but he also cautioned me "not to get involved in politics," if I also intended that the Chinese be the target audience. He said he had never seen any articles that studied Chinese university websites.

His words encouraged me to resume the research project in 2015. This time, I decided to focus on Chinese university websites only. Studying American university websites could be another project after this one. In 2016, I was invited to give a lecture at China's Capital University of Economics and Trade in Beijing. There, I met with the professor again, together with some other professors from China's Beijing University and Nankai University. We talked about technical communication and translation and website design. One of the professors from Beijing University told me that Chinese university websites are "often politically oriented, because they publish CPC policies and carry national and local news and give attention to political leaders." I had already come to a conclusion somewhat like this, but it was gratifying to hear it expressed by someone who was teaching at a Chinese university.

When I finished the first draft of my paper, I got it to these Chinese professors. I wanted them to comment on the first draft. I particularly wanted to know if they thought my study neglected some important aspects of Chinese university websites. Two of them provided feedback, and both were concerned that my study "is discriminatory against Chinese university websites because I analyze the websites from the angle of Western ideology." I invited them to tell me what I needed to do to address that issue. They told me that "showing respect to government leadership is a fine tradition" and that my study "criticizes" the coverage of the CPC and government policies.

I was a bit surprised because in my study I never said anything negative about the Chinese university websites; instead, I just show what the websites display and analyze the web content from the perspective of Confucian ideology. One of the professors who provided feedback was actually the one who had told me that the Chinese university websites were often politically oriented. So when he said my study was biased, he probably meant to tell me that I should not focus on the political aspect of the websites, just as the professor from Zhengzhou University had advised me.

Our email exchanges focused on ideology, though they occasionally commented on other parts of my study, such as the use of university gates and walls. Now I can still remember what they said to me in the final email to me: "The study as it is can never be published in China."

"Inform or Persuade? An Analysis of Technical Communication Textbooks," by Regan Joswiak and Mike Duncan, examines 10 of the leading technical communication textbooks (including the book adopted for STC's Foundation Certification, *Technical Communication Today*) for their coverage of informative and persuasive purposes in oral and written technical discourse. The study offers a semantic analysis of keywords and their permutations (e.g., inform, informative, persuade, persuasive) occurring in tables of contents, chapters (including examples and checklists), and indexes. Regan and Mike find that this long-lived separation of informative and persuasive in rhetorical purposes is inconsistently explained and applied, especially in discussions of oral presentations and technical reports. Their advice, as a consequence, is that textbooks drop this distinction as artificial and focus instead on the persuasive purpose of all technical discourse.

Regan's mentor on this research project is also the article's co-author. As she explains:

This article started as a seminar paper in the Research Methods course I was taking while I was in my master's program at University of Houston-Downtown, and Mike was the instructor for the course. After reading it, he encouraged me to expand the work and pursue publishing it, so we collaborated on the piece,

with him contributing to the theoretical background.

The idea for the paper came about, actually, because of Mike's commentary in the course and because of another course that I took with him my first semester in the program, Stylistics and Editing. One of the textbooks we were reading in the course demonstrated the same dichotomy as the ones in our analysis, so when I was later taking the Research Methods course, I thought back to this and felt the topic would be interesting to examine. Without Mike, however, I can guarantee that neither the seminar paper nor the article would have happened, so I would like to highlight the extent of his influence.

Other than Mike, if I go back further, I could point to my influence as an undergrad. My first heavy exposure to rhetoric was through Dr. Carroll Nardone while I was attending Sam Houston State University. I took Argument and Persuasion, Advanced Composition, and Studies in Rhetoric with her. She ultimately encouraged me to think about language in ways that I hadn't considered before through the readings and analyses my classmates and I conducted in these courses. It's really because of these classes that I was able to see the role of persuasion in communication and texts.

Meanwhile, Mike traces his thinking about this project to a graduate course with Michael Leff (1941–2010), Professor of Rhetoric and Chair of Communication Studies at the University of Memphis. As Mike explains:

He would always press me on my belief in the universality of persuasion in language. First, I thought it was because I was the English Department interloper, but then I realized we were having an extended conversation. I remember he asked at my dissertation prospectus defense if I thought all communication was rhetorical, and he was scowling somewhat as he asked. He did that a lot. My answer was that it was, but some language was more persuasive or more obviously persuasive—an improvisation that given the resulting grunt, seemed to satisfy him enough at the time. I've been trying to refine that off-the-cuff answer ever since. He was generally resistant to expanding rhetoric willy-nilly – and for sound reasons – but I also thought, and still do, that a "big rhetoric" was ideal for teaching purposes as a good way to introduce rhetoric to students who hadn't thought much about it before.

In Regan's and Mike's resulting article, we thus observe ideas that link three generations of scholars.

In "The Pedagogical Opportunities of Technical Standards: Learning from the Electronic Product Code," Jordan Frith focuses on the Tag Data Standard published by GS1. The 126-page TDS document (with 74 more pages of appendices) specifies the data format of the Electronic Product Code (EPC) and how this data is carried on Radio Frequency Identification (RFID) tags. Jordan's analysis of the TDS document identifies several deficiencies that would make for productive classroom discussion. For example, the document fails to display instructions in a consistent design, fails to indicate which sections address which of five intended audiences, fails to refer readers to 9 of the 14 appendices, and fails to highlight technical terms in the text that are defined in the glossary. Jordan proposes that instructors consider using technical standards like the TDS in their teaching because these documents are important examples of technical communication, composed by multiple authors for multi-layered audiences, offering multiple opportunities to discuss information design and usability.

Jordan's start on this project was subject to the indirect influence of researchers in a related field:

My biggest influence for this project actually fell outside tech comm to the related field of information studies. My "muse" in a sense was Susan Leigh Star (and also Geoff Bowker) who did such important work on infrastructure. I wasn't in contact with either one (Susan Leigh Star is deceased), but I felt like my work was in conversation with their important contributions to the field.

Star and Bowker did a lot to encourage social scientists and humanists to dive beneath the surface to explore the infrastructures and hidden documents and materials that hold our world together. That focus on the stuff below the surface is what got me interested in standards. Standards, after all, are ubiquitous and hugely consequential. They shape so many things we encounter, but they remain mostly invisible. I was inspired by their work to "make the invisible visible," and I was particularly interested in doing so for pedagogical purposes as a new way of thinking through teaching technical communication.

Star and Bowker have been fairly widely cited in technical communication scholarship, particularly their concept of boundary objects. But I was particularly receptive to their work on infrastructure for this piece. Even though I don't frame this article as focused on infrastructure, that belief in the importance of the often ignored, mundane documents of everyday life is what got me started examining the pedagogical potential of technical standards.

Since writing this article, however, I've also been working closely with Sarah Read who has also explored some of the oft-ignored documents that shape technical communication. And we are currently working on a book together on technical communication as infrastructure that includes extended work on technical standards.

"Recursive Participatory Mentoring: A New Model for Mentoring Women in the Technical Communication Workplace," by Lisa Melonçon and Liza Potts, reviews the existing research on the subject of mentoring. Lisa and Liza find that the majority of studies focus on settings in higher education and that studies of industry settings typically adopt the convention of the experienced mentor and the naive protégé as definitive. The available mentoring models neither encourage collaborative relationships nor acknowledge that a series of relationships for different kinds of knowledge sharing might be necessary. Lisa and Liza adapt the mentoring model of the academic organization Women in Technical Communication in order to make it applicable to women working in industry. Lisa and Liza discuss the six dimensions of their new mentoring model, illustrate its impact with a pertinent case, and identify five steps for effective implementation in a variety of job settings.

Lisa and Liza claim a shared influence on their research:

> This project came out of our broader concerns and commitment to mentoring women. Since both of us have industry experience and still do consulting, we were inspired by the many women we have mentored and how the process we describe works across different kinds of workplaces. In some ways there is not one individual influence, but rather, a collective necessity borne out of our own previous workplace experiences and what we've learned from working with Women In Technical Communication in higher education. We would both name Pat Sullivan as a key influencer of this project. Pat has been a mentor to both of us during our time in higher education.

> The scope of this collective influence on our thinking about mentoring includes a determination to make sure safe spaces are provided for women to discuss issues that are unique to their jobs. Outside of providing space, women in the workplace have taught us the value of listening and accepting that there are always multiple paths and ways to achieve the same goal. That is, women need to match their mentoring experiences to who they are. Our experiences mentoring and being mentored and matching that to our understanding of the research process was what led to the updated mentoring model we present in this issue. This collective influence was driven in large part from the lessons we learned from Pat about space and listening and providing an empathetic response to women's concerns and issues.

> Pat's influence is legendary in that she is likely to be named by a large number of women

in higher education, and she also embodies many of the characteristics that are present in the model that we describe.

In "Audio Description: Making Useful Maps for Blind and Visually Impaired People," Megan Conway, Brett Oppegaard, and Tuyet Hayes demonstrate the process of translating visual information to acoustic information using the example of National Park Service tourist materials. Insights from blind, visually impaired, and sighted stakeholders inform their effort, as does empirical evidence from the field and research on the practice of localization. From this mixed-methods inquiry emerges a series of tentative guidelines for the creation of more accessible maps through audio description. Especially important is that translators identify the map's purpose (e.g., crossing territory versus displaying topography) and offer a brief overview of key features or sections of the map before proceeding to a detailed description that allows individual exploration of the site. The influences on their thinking about this project were several.

For Megan, building on a lifetime of experience as a deafblind individual, the opportunities for conversations with blind or visually impaired people about their experiences proved especially important:

My "muse" for this work is my own experiences as a visually impaired person (in fact a deafblind person) and the experiences of my friends and students over the years.

As an academic, I have sat through many presentations that inspired me to think more theoretically about problems of accessibility and equal access to the world around me, but nothing is more "inspiring" than showing up to an activity, expecting to have a good time but finding yourself isolated and left out of that activity because you can't see and/or hear what is going on.

To me, the need for audio description is a no brainer, and solving the various problems of how to do it well so that people who are blind or visually impaired get the most out of the experience is like figuring out the puzzle of how my own life can fit into the rest of society. While doing research for this project I had the opportunity to talk with other people who are blind or visually impaired about their experiences, their thoughts about audio description and how to make it better, and their words are what drove my thinking when working on this project and this article.

For Brett, it was the rhetoric scholar Gerard Goggin:

I had some key discussions about this topic with Gerard Goggin, the Wee Kim Wee Chair in Communication Studies at Nanyang Technological University in Singapore. Dr. Goggin published the first international study on Digital Disability in 2003, and he has integrated

his interests in emerging communication technologies and disability studies for decades, including the books *Disability and the Media* (2015), and the new *Routledge Companion to Disability and Media* (2020), plus numerous benchmark journal articles.

I wanted to find common ground between technical communication and disability studies that created a fertile discussion space for scholars and practitioners from both disciplines. Dr. Goggin's transdisciplinary work in this area provided inspiration and also many concrete examples of how that sort of discourse could be done. In my talks with him about the challenges of this, and related projects, he gave me both encouragement and practical guidance that I appreciated. He was one of the first to welcome me into this research community many years ago, and his work is the model for anyone bridging communication and disability studies, especially when that bridging relates to emerging media topics.

And for Tuyet, the key influence was Brett, who invited her to contribute to this project as a research assistant. In this capacity, she focused on identifying and reviewing the existing and pertinent studies of the topic and, thus, immersing herself in sources of inspiration.

The insights offered here about mentors and muses, I think, make the case for instituting

Acknowledgments as a required section for published research articles. In a field that cultivates interactivity, networking, and a constellation of relationships, we ought to operate on the simple expectation that researchers will readily identify the individuals whose wisdom and generosity have made possible the manuscript's publication. I don't think this required section ought to be a generic "to my spouse and family for their love and support" or "to the reviewers and editor for their perceptive comments" but a specific identification of advisors and guides for their precise contributions to the inception, continuation, or completion of a research project. In adding this required section, we would reinforce the humanity of the research we do and the community of attentive and receptive colleagues from which it arises.

In this discussion of mentors and muses, I would also point to a key section of this journal, Recent & Relevant, and, specifically, the retiring editor Lyn Gattis, the incoming editor Sean Herring, and their conscientious monitors who continuously check research journals across this and related fields for articles that might guide the teaching and practice of technical communication. I know that my research and writing as well as my editing of this journal profit immensely from their influence. Their efforts in every issue bring to light a wide array of pertinent research and bring to my notice important studies that I likely would fail to find. I appreciate that *Technical Communication* is the only journal in the field that offers this easily accessed and reliable source of inspiration, and I acknowledge the R&R mentors and muses who make it possible.

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The cover recognizes STC Fellows past and present for their contribution as mentors and muses to the authors of the articles in this research journal from its earliest issues. The abiding support of these exemplary members of the profession for rigorous inquiry and its application to teaching and practice is a continuing source of inspiration for researchers across the field.

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A Study of the Websites of the 42 Double First-class Chinese Universities: How Does Confucianism Influence the Content on Chinese University Websites?

By Daniel Ding

Abstract

Purpose: Based on my examination of the websites of 42 elite Chinese universities, this article reveals relationships between Confucian notions of collectivism and deference to superiors and content features on the university websites.

Method: Using content analysis, I examined the following features on the homepages of the Chinese university websites three times in three consecutive months:

1. political/national agendas,
2. history and tradition,
3. important people,
4. groups of people; and
5. campus views.

Results: My three examinations indicate that the Chinese university websites consistently show certain aspects of the above five features, which serve rhetorical and social purposes: political and national agenda claiming authorship of website content, history/tradition justifying current status, important people guiding university work, large groups of people showcasing the CPC ideologies, and campus buildings and structures symbolizing social elites.

Conclusion: Confucianism helps us discern patterns in the design of Chinese university websites. Despite its limitations, this study serves as a small window into the many relationships between Confucianism and Chinese university websites.

Keywords: Confucianism, Web design, culture, collectivism, content hierarchy

Practitioner's Takeaway:

When developing websites for their companies in China, website developers need to create a content hierarchy on the websites, giving priority to the content that features collectivism and deference to superiors, like presentations of "overall agendas," authority endorsement, group themes, traditions, and buildings. More specifically, they should give attention to the following five suggestions:

- Present national agendas on the website, or carry news that features national leaders, to stress the company's interest in some notion of common good for the entire nation.
- Publish political leaders' talks or show their pictures, particularly pictures of leaders visiting the company.
- Make connections between a company's traditions and its current status.
- Stress themes of collectivism, such as groups of employees, faculty, students, families, or consumers.
- Feature company buildings, walls, gates, gardens, or landscapes.

Daniel Ding

INTRODUCTION

In the past twenty years or so, a large number of researchers and practitioners have studied websites developed in China (Chinese websites), mainly as a business or a marketing tool; very few researchers have studied impacts of Confucianism, the single most influential philosophy in China (Ding, 2006; Yum, 1996) on Chinese websites. This article specifically addresses this gap in the literature on culture and the Web by studying Chinese university websites. It is significant to study how Confucianism influences Chinese university websites, specifically for three major reasons.

First, communication between East and West "can be the most problematic" because of the extreme cultural differences between them (Barnum, 2011, p. 132). Chinese culture, particularly Confucianism, is very influential in the East (Ding, 2006; Fung, 1997; Yum, 1996), so studying how Confucianism influences Chinese websites helps to narrow the gap between the East and West in online communication expectations.

Second, China is the second largest economy in the world, and its economy is still developing at a rapid speed. China's rapid development of economy has enabled China to expand the potential of its universities. Now it boasts the largest university student population in the world (Farnsworth, 2005; Gardner & Whitherell, 2007; Tang 2011). Globally, 20% of the world's international students come from China (Choudaha & Chang, 2012). In the USA, Chinese students account for more than 31% of all international student enrolments in recent years (John, 2016; Zong & Batalova, 2016). On the other hand, China is hosting more and more international students. In 2016, for example, more than 440,000 international university students were enrolled in China, a 35% increase from 2012 (CSIS, 2018). In other words, more and more international exchanges are occurring between China and the rest of the world, especially the Western world. Online activities play an important role in these exchanges. Online communication is thus a major bridge between Chinese universities and other universities in the world. Therefore, the bridge builders—technical communicators—need, among other things, to understand the cultural expectations that underlie presentations of information on Chinese university websites.

Third, as one factor that influences Chinese university websites, Confucianism could be missed or misinterpreted by technical communicators, especially those from non-Confucian cultures. Thus, this article, through a content analysis of various visual and verbal information on Chinese university websites, reveals and interprets the connection between Confucianism and the content on the Chinese university websites.

To be more specific, I argue that the Confucian concept of human kindness (*Ren*) influences the content features on Chinese university websites and that these features serve various rhetorical and social purposes to represent the universities. I first review relevant literature on cultures and website design. Second, I introduce the Confucian concept of human kindness (*Ren*) as the major philosophical perspective that shapes the communication process in China. Third, I describe my research method and procedures. Next, I report the research results. Then, I analyze the significance of the results—the functions of the Web content features. Finally, I suggest some implications of my research findings for technical commination practitioners.

I want to be very clear about what I claim and what I do not claim in this article. Arguing for the impact of Confucianism in the creation of Chinese university websites does not suggest that Confucianism is the only factor that impacts the content on the Chinese university websites. Web design is influenced by many factors, such as general cultural values, marketing strategies, social considerations, legal issues, Web design theories, audience information needs, and practical measures. Thus, it would oversimplify the issue of Web design to imagine that the Chinese university websites are influenced by Confucianism only. However, as I will show, Confucianism does contribute to the design of the Chinese university websites, and, therefore, studying these websites from the angle of Confucianism will help to reveal patterns that audiences would not be able to see in the design of these Chinese university websites if we approach them from other angles.

LITERATURE REVIEW: WAYS CULTURES SHAPE WEB DESIGN

Scholarship in computer science, marketing business, sociology, communication, cultural studies, and Web design technology has already established that cultures affect presentations of information on the Web.

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Basically, there are two corpora: studies focusing on websites designed in countries other than China (non-Chinese websites) and studies focusing on Chinese websites. Studies from both corpora inform this article.

Studies on Non-Chinese Websites

Although many previous studies analyze website designs as driven by cultural values, content analysis seems to be a major research method in studies of Web content. For example, to either confirm or reject Hofstede's five cultural dimensions, Callahan (2007) analyzes 900 university websites from 45 countries by comparing and contrasting people, buildings, animation, navigation styles, page length, and other design features on these websites. Similarly, Marcus and Gould (2012) introduce Hofstede's five cultural dimensions by applying them to websites from various countries to demonstrate the cultural values indexed by the five dimensions. What is noteworthy is that they have identified and tested the features to look for on the Web that index each of the five cultural dimensions. For example, a highly collectivist culture may show group activities, official slogans, political agendas, government officials, or political leaders on the Web. Their study was first published in 2000, and, since then, it has been invoked or cited 1,067 times (Google, 2018), which suggests that it is very influential in the field. Singh's (2003) study of websites from Germany, France, and the USA proposes a framework for studying website content in manifesting various cultural values. The study suggests that collectivist cultures and cultures that respect power may publish national policies and slogans, feature important people and groups, stress patriotism and history, and carry images of buildings. In this respect, Singh would agree with Marcus and Gould. St.Amant (2005) defines a strategy for analyzing and designing websites for users from various cultures. In his study, St.Amant points out that university websites can be used as the websites for prototype analysis because such sites employ features that are "accepted by a broad audience within a particular cultural group" (p. 82). This point is closely related to this current study because it suggests that within a particular culture, university websites well represent the cultural features.

The review of the above studies suggests that first, content analysis reveals that design of websites is shaped by local cultures. Second, some of the website content

features are attributable to cultural dimensions of collectivism and deference to power.

Studies on Chinese Websites

Studies in this group are more closely related to this article. Again, content analysis appears to be the major research method in this group. Ding's (2010) article, for example, compares the Chinese Foreign Ministry's (CFM) website with the U.S. State Department's website and shows that the CFM website tends to use numerical lists without using action-oriented verbs when providing instructions. Ding attributes this feature to the influence of Confucianism and another traditional Chinese cultural value of naming the unknown world with nouns. Ding's is one of the very few studies that applies Confucianism to analysis of Chinese websites, though it analyzes navigation styles only. Hawes (2008) examines 119 Chinese corporations' websites to see how the concept of "corporate culture" is represented on the websites of large Chinese corporations. Their analysis suggests that information representing cultural values "appear[s] to be a mixture of traditional Confucian principles … and socialist principles" (p. 57). Particularly telling is the author's finding that these websites "take pains to publicize their support of the Communist Party of China (CPC) and its policies" (p. 53) and "display their Party credentials as a major aspect of their 'corporate cultures'" (p. 54). This finding supports Marcus and Gould's (2012) observation that a highly collectivist culture may display political agendas on its websites.

Hillier (2003) studies some Chinese websites that use both Chinese and English, and claims that cultural context determines usability of bilingual or multilingual websites. Therefore, Hillier suggest that bilingual or multilingual website developers should consider both cultural and usability factors. Couched in Gould and Marcus's (2012) theories, Hillier (2003) believes that content features on websites manifest "Hofstede's cultural clusters" (p. 10). Hillier's study suggests that content features identified by Gould and Marcus on websites correspond to associated cultural values. Qiu et al. (2004) focus on technical aspects of the top 100 Chinese universities by analyzing the "links" between websites, between Web pages, or between websites and Web pages. Though the authors do not employ Chinese culture in their study, they do point out that Web Impact Factors do not work for Chinese universities

because their websites do not contain much "academic information" (p. 471) and that a Chinese university's higher social status may attract more links to its website.

Tang (2011) analyzes ways pictures from the websites of 100 Chinese universities and 100 U.S. universities are used as marketing tools to attract potential students. Couched in Hofstede's, Hall's, and other cultural or marketing theories, Tang's study shows that Chinese university websites, as a marketing strategy, display school administrators much more frequently than the US university websites. This finding supports Hofstede et al.'s (2010) and Marcus and Gould's (2012) observations that high power-distance countries such as China show deference to authorities. Wurtz (2005), in her study, applies Hall's and Hofstede's cultural theories when analyzing the McDonald's website from China and compares it with corresponding websites from some Western countries. The results show a great contrast between the websites from the high-context cultures and those from the low-context cultures, and thus indicate that the websites designed in collectivist cultural environments stress collectivist cultural values such as relationships and groups.

The review of the studies on Chinese websites, though limited in number, demonstrates that various Chinese cultural values shape the websites, but none of these studies analyze the websites consistently from the angle of Confucianism as an influencing factor. The above review suggests that we still know very little about how Confucianism contributes to the content features on Chinese websites or how these features function on the websites. To address these issues, I need first to introduce Confucianism in the next section.

CONFUCIAN NOTIONS OF DEFERENCE TO SUPERIORS AND COLLECTIVISM

Because this article studies how Confucianism impacts the content on the Chinese university websites, this section introduces Confucianism, especially its concept of human kindness (*Ren*).

Researchers have already pointed out that Confucianism heavily influences communication process in the Chinese tradition (Huang et al., 1994; Yum, 1998; Ding, 2005; Abubaker, 2008). I'd like to stress that the two core values of Confucianism—proper human relations and modesty—affect the

communication process in Chinese culture more than any other values of Confucianism.

In Confucianism, three basic ethical principles regulate social interactions, including communication:
1. *Ren* (human-heartedness, to love others)
2. *Yi* (to be righteous)
3. *Li* (proper conduct)

These three principles guide all human behaviors in society (Chen, 1997) because they define "a traditional concept, that of *chun-tzu* or [morally] superior man" (Chan, 1998, p. 15) by providing standards for becoming a superior person (Herr, 2003). Simply put, the three principles enable us to differentiate a morally acceptable behavior from an unacceptable one.

Fung (1997) elaborates on the interrelatedness of these three principles: *Ren* is made manifest in *Yi* and *Li*. *Yi* means "ought-ness" of a situation (p. 42), meaning that to be righteous, people ought to fulfill certain duties in society. The primary duty is to love others, or *Ren*. But how do they show this "love"? For Confucius, they must follow *Li*, (proper conduct), "the written code of honor governing the conduct of aristocrats"—morally superior humans (Fung, 1997, p. 155). *Li* consists of several values that Confucianism holds up as moral standards, of which proper human relationships and modesty are most closely related to communication process.

Proper Human Relationships

Confucianism considers proper human relationships as the basis of a harmonious society. Confucius (1991) identifies five dual relationships: monarch-subject, father-son, husband-wife, elder-younger, and friend-friend (p. 31). Of these five dual relationships, family relationships are the basis of all relationships because the family is the basic unit of human community. For Confucius, therefore, the monarch-subject relationship is the extension of father-son relationship, so Fung (1997) points out that the dual relationship between monarch and subject "can be conceived in terms of that between father and son" (p. 21). The father-son relationship is the core of the five dual relationships, just as Yao (2001) argues that Confucius put the father-son relationship "above all other considerations" and family responsibilities above all other duties (p. 181). The family responsibilities entail that sons must love fathers, wives must obey husbands, and the younger must respect the elder. By extension, subjects must love,

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obey, and respect the monarch. Mencius (1991), who transmitted and developed the teachings of Confucius and who was second only to Confucius himself in creating the historical importance of Confucianism, claims that "if everyone loved his parents and treated his elders with deference, the whole world would be at peace" (pp. 122–123).

In the Confucian philosophical system, the monarch, the father, the husband, and the elder are superior to the subjects, the son, the wife, and the younger. These distinctions are further developed by Dong Zhongshu, a major Confucian philosopher in the Han dynasty (206 BCE–220 CE). When expanding on Confucius's moral philosophy, Dong Zhongshu proposes that, in each dual relationship, the superior guides the inferior (He et al., 1982; Chan, 1998; Huang et al., 1994). In other words, the superiors have "become the standards for the inferiors to observe" (Chan, 1998, p. 277). So the inferiors must treat their superiors with deference, and only in this way can family or social harmony be maintained. When conflict occurs in the family or chaos occurs in society, the blame is always put on the inferior members because the inferiors must have behaved inappropriately towards the superiors; thus, the only way to resolve the conflict or to bring order out of chaos is for the inferiors to become humble, blame themselves, and show deference to the superiors (Yao, 2001).

Influenced by Confucianism, Chinese culture highly respects superiors and power. In the communication process, establishing proper human relationships requires communicators to pay deference to their superiors and power.

Modesty

Modesty, according to Confucianism, is another moral virtue that individuals must uphold. Confucius (1991) observes that "the morally superior has morality as his basic stuff and … by being modest gives it expression" (p. 157). Individuals display modesty by de-emphasizing the self and showing deference to others in social interactions. From Confucius's perspective, individuals exist only through their relationships with others: Wherever they are, individuals must have a name defined by the relationship structure—monarch, subject, parent, son, wife, friend, etc. Individuals do not exist without assuming a name that designates their positions in the relationship structure (see also Yee,

2001, p. 71), because they believe that self-actualization occurs only in social relations. In Herr's (2003) words, they exist in a "net of five human relations" (p. 471). This emphasis on relationships leads people in Chinese culture to deemphasize the self and to stress the collective (Huang et al., 1994; Winfield et al., 2000).

Driven by Confucianism, Chinese culture is highly collectivistic. In Chinese professional and technical communication, communicators usually deemphasize themselves by describing themselves in derogatory terms and describing others in laudatory terms while emphasizing the common interests of the collectives or of all parties involved, or they may stress the importance of long-term cordial relationships rather than their own business profits (Huang et al., 1994). Modesty requires communicators to pay respect to the collectives in the communicator process, in order to establish their own credibility.

METHODOLOGY

Formulating Research Questions

As the review of literature shows, researchers and practitioners provide strong evidence that content analysis reveals that cultural dimensions of power distance and individualism/collectivism are applicable to analyzing website content and that culture influences Chinese website design. However, none of the studies of Chinese websites is couched in Confucianism as an overarching influencing factor. Most of the studies look at the websites in the context of marketing/business, so we still know very little about how Confucianism contributes to the content features on Chinese websites or how these features function. If, as Steenkamp and Jan-Benedict (2001) have pointed out, websites used in different contexts, such as business vs. academics, manifest cultural values differently, certainly we have yet to lean how Chinese university websites manifest Confucianism. This article extends beyond the previous studies by examining how Confucian notions of collectivism and deference to power impact Chinese university website design. To do this, this article answers these two questions:

1. How do the content features, both verbal and visual, on the Chinese university websites manifest Confucian notions of collectivism and deference to power?

2. What rhetorical and social functions do the content features perform to represent the universities?

In answering the first question, we identify the surface content features as influenced by Confucian notions of collectivism and deference to power. But to gain a deeper understanding of the Web content, we need to go beyond just identifying the surface features. That is, we must also find out how they serve to virtually represent the universities in society, so we must also examine their functions. Researchers suggest that Web content features perform their various website functions to represent the Web owners (Herring et al., 2007; Liao et al., 2006), so the second research question has been formulated.

Research Method

To address the research questions, this article employs content analysis of various visual and verbal information on Chinese university websites, discussing how Confucianism influences the content information on the Chinese university websites. Content analysis is a very common method of investigation for studying websites (Babbie, 2015; Baek & Yu, 2009; Liao et al., 2006). Scholars indicate that content analysis of information on websites helps measure cultural impact on website content (Calabrese et al., 2014; Singh et al., 2005; Tang 2011; Wang & Cooper-Chen, 2009), and researchers have used content analysis to analyze verbal and visual representations on university websites (Hartley & Morphew, 2008; Saichaie & Morphew, 2014). They also use content analysis to analyze the purposes, functions, and themes of the content (Herring et al., 2007; Lawson-Borders & Kirk, 2005; Saichaie & Morphew, 2014; Trammell & Keshelashvili, 2005). Therefore, a content analysis of both verbal and visual information on Chinese university websites was conducted.

Data to Be Collected: Content Features for Analysis

To address the research questions, I need to identify the web content features that manifest Confucian notions of collectivism and deference to superiors. In this respect, scholarship has presented a wide variety of perspectives on culture and content features. For example, Hawes (2008), Marcus (2003), and Marcus and Gould (2012) suggest that collectivist cultures tend to show political/national agendas/announcements on their websites. Marcus and Gould (2012), Singh (2003), Singh and Matsuo (2004), and Singh et al.

(2003, 2005) indicate that cultures that value deference to superiors tend to emphasize tradition/history on their websites. Marcus and Gould (2012), Paek (2005), and Singh and Martinengo (2015) discover that cultures that show deference to superiors focus more on illustrating important people, authorities, or government officials on websites. Marcus (2003), Singh and Matsuo (2004), Tang (2011), and Wurtz (2005) show that collectivist cultures often use images of groups on their websites. Dormann and Chisalita (2002), Marcus and Gould (2012), Okazaki and Alonso Rivas (2002), and Tang (2011) correlate portrayal of buildings, structures, and natural scenes on websites with cultures that value collectivism and stress deference to superiors. Singh's (2003) framework for studying content features in depiction of cultural values on websites "has been empirically validated and shows adequate reliability" (Singh et al., 2005). Baack and Singh's (2007) study of 274 websites from 15 countries in Asia, Europe, and North America seems to confirm the various correlations between cultures and website content the above cited scholars study. Informed by the above studies, this article chose the following five categories of Web content features for analysis:

1. Political/National Agendas,
2. History/Tradition,
3. Important People,
4. Groups of People, and
5. Campus Views.

Based on these five features, I developed a rubric for collecting data from the websites. The rubric explicitly provided criteria to classify the content features and guided analysis. Table 1 shows the rubric—the content features for analysis, their operationalization, and their meanings.

Collecting Needed Data

Content analysis allowed me to collect the data I needed to address the research questions, because it is an empirically validated research method for studying both visual and verbal information "to identify the messages and meanings directly and through inference" (Saichaie & Morphew, 2014, p. 506; see also Krippendorff, 2004). Generally speaking, content analysis allows us to classify visual and verbal messages, analyze each of theme, assign each a category we have designed for the study, and designate a cultural value the category manifests, as evidenced in Simon's (2001)

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Table 1. Web content categories for analysis

Categories	Operationalization	Meanings
Political/National Agendas	News or images or narratives that announce communist party or government meetings; that feature political slogans, government activities, or communist party or government's calls; and that cover city-wide, province-wide , and nation-wide events like the national games.	Signifying collectivism and deference to superiors and power
History/Tradition	Narratives or images that recounts history or feature tradition or that ties present to the past	Suggesting deference to superiors and power
Important People	News or images or narratives that feature communist party or government leaders, school administrators, or celebrities	Showing deference to superiors and power
Groups of People	Images of no fewer than five faculty, staff, students, or other people	Demonstrating collectivism
Campus Views	Buildings, gates, walls, man-made lakes or hills, lawns, gardens, or bird's-eye views	Suggesting collectivism and deference to superiors and power

and Baack and Singh's (2007) studies. University websites are vehicles of communication that employ both visual and verbal messages, so content analysis enables us to classify and examine the university website content features. It enables us to establish crucial links between cultural dimensions and Web content features as driven by various cultural dimensions.

In this particular study, content analysis allowed me to analyze all the verbal and visual messages and to classify them into one of the five categories, guided by the rubric as shown in Table 1. To be more specific, featuring political/national agendas and important people on websites demonstrates the website owners' desire to pay respect to superiors and power. Showing history/tradition helps justify and reinforce the current status of superiors and power. Using groups of people suggests website owners' endorsement of collectivism. Structures and buildings are symbols of power and represent collectivist achievements (Lasswell, 2017; Samuels & Samuels, 1989; Williams, 1996). In short, these five features give expression to the perspectives of power and collectivism.

Choosing Chinese Universities

I chose the websites of the 42 Double First-class (*shuangyiliu*) Chinese universities. In 2005, the Chinese government initiated the "Double First-class University Plan" and implemented it in 2007 in an effort to create world-class universities and disciplines by 2050 (*Charlesworth* Group, 2017). The Plan lists 42 Chinese universities, which are already elite universities in China and therefore are highly influential. According to a Chinese government spokesperson, these universities were selected through "a process of peer competition, expert review, and government evaluation" (ICEF, 2017). Because these 42 universities represent top-level education of China's institutions of higher education, they represent China's higher education in a more general sense.

Choosing University Websites

I examined only the homepage of a university's website because a homepage represents "the face" of the university and serves as the official gateway to the other pages on the website (Askehave & Nielsen, 2005; Baek & Yu, 2009; Wang & Cooper-Chen, 2009; Tang, 2011; Zhang & O'Halloran, 2013). A homepage defines how

a website is structured and information is organized (Bateman, 2008). Thus, I believe the homepage of a website is most directly and extensively affected by its native culture. In addition, studying a university's entire website is beyond the scope of this paper.

Procedures

I scrutinized every homepage, counting both visual and verbal representations on the homepage. I also clicked buttons if and only if they suggested a category I was looking for, like "university history" and "students' ideology work" because I wanted to find out the details of the content. I did not click any non-homepage buttons.

I browsed all the homepages of the 42 Chinese universities' websites one by one on February 27, 2018. When I came to one homepage, I examined all the items on the page, including the lead image, images that accompany news, news items, narratives, announcements, and all the buttons. I analyzed each item and assigned it to one of the five content categories. If an item matched the feature I was looking for, I wrote down "1" under that feature. For example, under "campus views," I wrote "1." The number "1" means that one university's homepage features "campus buildings, gates, walls, trees, hills, lakes, or lawns." If news on a homepage reported a government officials' activities, it counted as "1" under "important people." If a large group also appeared, e.g., listening to the government official, then it also counted as "1" under "groups of people." I want to emphasize that I focus on how many homepages display a particular feature, not how many times a particular feature appears on a university homepage. "One-time appearance" of a particular feature on a homepage is evidence, as significant as "two-time or three-time appearance" suggests the impact of culture. Finally, a picture

featuring a group of people with structures as the background, such as a university gate, is recorded as both "groups of people" and "campus views."

Because some universities update their websites every day or every week, to guarantee reliability of the results, I repeated the above procedure twice—one month and two months after my initial examination of the 42 universities' websites.

RESULTS

This article argues that Confucian notions of collectivism and deference to superiors impact content on Chinese university websites. Indeed, of all the 42 homepages, 42 promote "national and political agendas"; 42 feature "history/tradition"; 40 depict "important people"; 38 portray "groups of people"; and 28 display "campus views," including buildings, university walls, gates, or landscapes." Table 2 summarizes all these numbers.

Political/National Agendas

Fort-two (42) university websites carry items that promote "national and political agendas," as Table 2 shows. This category of content features signifies "collectivism and deference to superiors and power," as Table 1 indicates. This is perhaps the most prominent feature on the homepages of the university websites so that when our eyes scan a page, we constantly encounter words or phrases like "Proudly stride into the new era (a phrase coined by Xi Jinping, referring to the years under his rule), "the Party," "Xi Jinping," "political tasks," "the Party's original aspirations," "Study the proceedings of the Party's Congress," and "study the series of speeches by Xi Jinping." Pictures of political

Table 2. Content categories on 42 Chinese university websites (n=42)

Web Items	Frequency	%
Political/National Agendas	42	100%
History/Tradition	42	100%
Important People	40	95.24%
Groups of People	38	90.48%
Campus Views	28	66.67%

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leaders presiding over CPC meetings are often used as the background of political slogans.

Political/national agendas appear in several formats. First, they may appear as lead images. Second, they may appear in news reported on the homepages, often with accompanying pictures. Third, they may appear in the column of announcements on the homepages. More often, they appear as clickable images placed either towards the bottom of the homepages or on the side. They feature Xi Jinping's profile picture, the emblem of the CPC, the site of the CPC Congress, or a picture of Xi Jinping addressing the Congress. All the 42 universities have these images on the homepages of their websites.

History and Tradition

Forty-two (42) university websites contain the feature of "history and tradition," which suggests "deference to superiors and power," as Table 1 indicates. Most of the universities show their histories and traditions by employing clickable buttons on top of the homepages. These buttons are labeled variously "General Survey," "Overview," "History," or "University Tradition." Some universities employ clickable images that display some photographs from the past or the exhibition hall of the university's history. A click on one of the buttons embedded within the image will take you to a page that features extensive discussions of the university's history and tradition.

This feature often registers accounts of particular individuals significant in the history of the university, such as famous graduates, political figures, or social dignitaries. For example, Qinghua University lists Xi Jinping and Hu Jintao; Beijing University boasts Mao and Hu Shi.

Important People

Forty (40) university websites contain the feature of "important people." This feature suggests "deference to superiors and power," as seen from Table 1. The types of important people who appear on the university websites are government officials and/or school administrators. They are always depicted as authoritative figures giving instructions or as caring leaders visiting faculty, staff, or students or touring campus. For example, Ocean University of China's homepage devotes its lead image to Vice Premier Liu Yandong, who, among a large of group of school administrators and faculties, is talking

to a man. The caption claims that Politburo Member and Vice Premier Liu is issuing directives. Similarly, Beijing University's homepage devotes its lead image to a large but crowded hall where school administrators are sitting at a large table in the middle among a huge crowd to celebrate the Chinese New Year of 2018. Tsinghua University's homepage features a picture of school administrators visiting faculties on the Chinese New Year's Day.

Groups of People

Thirty-eight (38) university websites depict "groups of people," a feature that demonstrates "collectivism," as shown by Table 1. These websites feature two types of groups. First, groups of faculty, staff, or students collectively bring honor to campus; second, groups of faculty, staff, or students attend political meetings. For example, Zhengzhou University's homepage features four rows of students singing on the stage of a vocal competition. More often, the homepages publish pictures of large meeting halls with huge crowds of participants. For example, Minzu University of China's homepage carries a picture of a large group attending a CPC meeting on campus. East China Normal University's homepage shows a picture of 15 school administrators posing for pictures at the site of the Shanghai Municipal Congress of the CPC. Yunnan University devotes the lead image on its homepage to its campus-wide faculty meeting.

Campus Views

Twenty-eight (28) university websites show "campus views," a Web feature that suggests "collectivism and deference to superiors and power," as Table 1 indicates. The homepages of the 42 universities' websites often depict large structures on campus, including a bird's eye view of campus, groups of buildings, single buildings, and campus gates with walls. For example, the homepage of Renmin University of China carries a large picture of a tall building with a wall extended to its right surrounded with bamboo groves. Northwestern Polytechnic University carries serval pictures of buildings with decorated walls on its homepage. The lead image of Zhongshan University's homepage features two walls with a building in between; Shandong University and Huazhong University of Science and Technology devote their homepages to pictures of campus gates with walls extended to either side.

My Second and Third Examinations

To guarantee reliability of the data, I examined the homepages of the 42 universities' websites two more times, on March 27 and April 27, because some universities update their homepages every day or every week. The results of my second and third examinations are consistent with the results of my initial examination. Tables 2 and 3 illustrate the results of my second and third examinations.

As you can see from these two tables, rates of the first two categories remain the same, which suggests that these two are essential to a Chinese university website. In other words, the website seems compelled to demonstrate the prominence of these categories by presenting them constantly on the Web. The rates of the other three features changed very slightly, but the changes do not alter consistency of the results throughout my three examinations of the websites. So the results of my examinations of the homepages of the 42 Chinese universities' websites suggest that these universities may update the content but not the content categories. My findings suggest that these universities' websites value collectivist interests and show deference to superiors, two cultural values motivated by Confucianism. To understand how the five content

categories function, I will analyze their functions in the next section.

DISCUSSION

In this article, I argue that Confucian notions of collectivism and deference to superiors contribute to the content features on Chinese university websites and that these features serve various rhetorical and social purposes to represent the universities. The previous section shows that the Chinese university websites contain various aspects of the five content features that manifest these two Confucian notions. In this section, I discuss the rhetorical and social functions of the five content features on the websites.

Political/National Agendas

No other features manifest the Confucian notions of collectivism and deference to superiors more prominently than this feature. It appears to be the overarching theme that frames the entire homepage, as all the 42 university websites analyzed display this feature on their homepages. Often, this feature takes up the entire homepages, as demonstrated by Xian Jiaotong University, Rennin University, Yunnan University

Table 3. University Web content categories as found on 03/27/2018 (n=42)

Web Items	Frequency	%
Political/National Agendas	42	100%
History/Tradition	42	100%
Important People	38	90.48%
Groups of People	37	88.10%
Campus Views	25	59.52%

Table 4. University Web content categories as found on 04/27/2018 (n=42)

Web Items	Frequency	%
Political/National Agendas	42	100%
History/Tradition	42	100%
Important People	39	92.86%
Groups of People	35	83.33%
Campus Views	27	64.28%

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homepages, just to name a few. Thus, these homepages look more like portals to governments' websites.

The heavily politicized feature on the homepages translates into authorship. In other words, this feature fulfils the rhetorical function of authorship. In the Chinese tradition, authors did not create texts; instead, "texts created their authors" (Denecke, 2017, p. 344). For example, traditionally, Confucius has been considered the author of *The Analects* simply because it carries his teachings and invocations though the text was composed by his disciples after his death. The attribution of authorship to authoritative figures helps enhance the significance of the text and facilitate its authoritativeness, as in the case of *The Analects*. The impact of this particular way of generating authorship stretched well beyond early Chinese dynastic periods, going on to shape our views of authorship even in present-day China.

The strong authorial presence in the Web text through recurring images and names of the political leaders with their official titles as seen, for example, on Lanzhou University's homepage, the CPC agenda as evidenced on, for example, Xinjiang University's homepage, and political slogans as displayed on, for instance, East China Normal University's homepage, outright call for a paradigmatic author figure. This author figure serves as a political, moral, ideological, administrative, pedagogical, and perhaps even academic authority in the Web text, just as Confucius serves as the ideological, pedagogical, and moral model in *The Analects*.

At a more societal level, this authorial presence then serves the purpose of building an ideologically unified social structure. This presence ensures that only one voice is upheld—the voice of the Party and the government. Chinese culture prefers monism instead of pluralism; especially in creating and transmitting values, beliefs, and ideas; particularly those of the ruling class (Zhang, 1991). The author figure on the websites serves to strengthen administrative power and official ideology and to coordinate with the national agenda that ideological and political work must be stressed in pedagogy and in the entire curriculum (Xi, 2016). Looked at in this way, the authorial presence on the university websites serves as pedagogical as well as ideological authority. It is just one online mechanism for the CPC to maintain its domination over college education and curriculum. It represents the CPC's

attempt to spread its ideology as the sole legitimate ideology, to unify values, beliefs, and ideas, and to manipulate the consciousness of college instructors and students. As Lu (2017) forcibly argues, many of the CPC's rhetorical strategies to govern the nation are "rooted in Confucian tradition" (p. 20).

History/Tradition

Chinese culture always stresses the roles of history and tradition in society. In Chinese antiquity, Confucius (551–479 BCE) invoked history and tradition of the Xia dynasty (ca. 2070–ca.1600 BCE) and the Shang dynasty (ca. 1600–ca.1046 BCE) as model societies. Confucius highly praised Zhou because it was devoted to these past two dynasties by emulating their splendid civilization. Confucius himself loved history and tradition, so he called for "applying the past rituals" to his own society (Confucius, 1991, p. 125). Here, Confucius saw civilization as cultural growth, born in the past but stretched through time to his own society. More important, he argued that individuals should apply past knowledge to their contemporary situations, as Ames (1983) points out.

This tradition of flirting with the past continues to impact the present-day Chinese society, as suggested by all 42 university websites that showcase their histories and traditions. These universities often appeal to the past to show their "thick and heavy" (*hou zhong,* meaning rich and extended) historical traditions, as, for example, Beijing University, Xian Jiaotong University, and Sun Yat-sun University websites show. Rhetorically, the historical narratives serve to show the universities' political and academic muscle. Extended years of ideological and academic tradition is a guarantee that a university will set a new record both ideologically and academically. Like Confucius who looked to the past for inspirations to support his philosophy of "applying the Zhou rituals," here, Chinese universities draw inspirations from the past to showcase their current ideological excellence and academic excellence.

The historical narratives convey traditional values, but they also have values for the present tasks and constitute the foundation for the present as well. These universities recognize their historical traditions as a new starting point to build themselves into world-class universities. Like Confucius who applied historical knowledge to his contemporary circumstances, they also carry historical traditions one step further in applying

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them to the present situations. It seems that learning various traditions from the past is essential to elite education, which is thus infused with values attributed to history and tradition. However, the "History" or "Tradition" of a university does not just narrate the past as a series of events but stresses it as a series of actions taken by the university. In other words, the university searches for the past to reinvigorate the present; the university uses the past as a means to bolster the present, in the way urged by Confucius.

Important People

The homepages often carry images that show political leaders or school administrators inspecting campus and visiting faculty, staff, or students. This feature graphically exemplifies Confucian notions of veneration for superiors and emphasis on collectivism.

Representing rulers and officials in Chinese culture as revered by common people can be traced back to the beginning of Chinese writing. For example, *Classic of Poetry* (Gao, 1987), a Confucian classic, composed and compiled between approximately 10th century and 6th century BCE, praises clan leaders as virtuous exemplars, champions of agriculture, and builders of land. In Chinese antiquity, dynastic monarchs were portrayed as authoritative figures setting cultural standards, as we read in Confucius's (1991*) Analects*, or as caring rulers sharing pleasures with common people, as we find in *Mencius* (1991), another Confucian classic.

In my three examinations of the 42 Chinese university websites, at least 38 portray important people, such as government officials and school administrators. These websites portray the important people as the authoritative figures like the rulers in the Confucian classics: They are guiding university work by setting standards, as evidenced by, for example, the websites of Shanghai Jiaotong University and Ocean University of China. These images serve the rhetorical purpose of demonstrating to society that the institutions of higher education are under the leadership of the government and the CPC.

In addition, government officials and school administrators are also depicted as caring leaders who share pleasures with faculty, staff, or students, especially on holidays, as the dynastic monarchs do in *Mencius* (1991). For example, Tianjin University's website depicts the secretary of the CPC Tianjin Municipal Committee and the mayor celebrating the Chinese New

Year's Day with faculty and students on campus. This celebration suggests a feeling of friendship and trust between the officials and the faculty and students. They would rather rely on each other's companionship and joys to spend the most important Chinese traditional holiday than stay with their own families. At a more societal level, this strategy demonstrates that harmony exists on campus, as government officials and faculty and students share ideas and experiences; they simply support each other.

In short, the appearance of the political leaders and school officials on the university homepages sends clear messages that the government officials loom large on campus, that the institutions of higher education are under the leadership of the Party, and that the universities respect these leaders and officials.

Groups of People

In ancient China, masses of people were classified into groups. *Records of Rituals* (ca. 481–221 BCE), a Confucian classic, classified them into the old, the strong, and the young (Wu & Lai, 1992, p. 529). Confucius (1991) himself classified them into the old, the friends, and the young. As Ames (1983) explains, in ancient China, rulers were expected to "orchestrate the collective energies of the people" to guarantee success (p. 146). In the Chinese tradition, using the collective efforts of groups seems to serve two purposes (Ames, 1983, pp. 143–146). First, rhetorically, it helps generate collective wisdom which cannot be matched by any individuals. Second, at a more societal level, using the collective efforts of groups helps secure a ruler's success in running the society.

The websites of the Chinese universities value group work, as at least 35 university websites depict large groups of faculty or students. Images portraying large groups of students or faculty on the homepages serve the rhetorical purpose of generating collectivist wisdom. For example, the lead picture on Sichuan University's homepage depicts a large group of beautifully dressed students performing at China's Spring Festival Evening Concert, a nationally prestigious show. The message is loud and clear: honor is brought home only through collectivism. More often, group work is emphasized when a university website portrays images of large groups of people attending a CPC conference or other political meetings, as is illustrated by, for instance, the websites of Minzu University of China, East China

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Normal University, and Yunnan University. Sometimes, groups are represented as studying and practicing the CPC ideology or Xi's thoughts on socialism. These strategies, at a more societal level, serve to declare that the CPC ideology and Xi's thoughts are popular among faculty, staff, and students. They collectively practice the CPC ideology and XI's thoughts. Images of groups of people on the university websites intend to show group solidarity in politics. In this respect, using the collective strengths helps guarantee success in propagandizing the CPC ideology.

It appears that the Chinese universities, like the ancient Chinese rulers using the concerted strengths of groups, rigorously gather the physical and intellectual resources of the faculty and students to create a positive impression that people collectively support and practice the CPC ideology.

Campus Views

In Chinese culture, one issue facing the rulers of ancient China was to maintain social order, so Confucianism "pursued cosmological harmony through thoughtful architecture and land use" (Williams, 1996, p. 669). Driven by this thought, the imperial court was always thought to be the center of the universe, surrounded by various subservient social classes in circles radiating from the center (Wang, 2014; Xiao, 1990). In this way, the walls surrounding cities ensured hierarchical order to reflect Confucius's cosmological order, thus effecting the "harmonious organization of the cities" (Xiao, 2014, p. 36). The walls and the structures within them "were imbued with the signs of power, authority, and hierarchy" (Samuels & Samuels, 1984, p. 204).

If a city is a small cosmos, then a university is a small city, as Samuel (1986) seems to suggest, as at least 25 university websites in my three examinations illustrate. University walls with various buildings within the walls are imbued with ideology, reflecting university institutional hierarchy. Therefore, the buildings on campus and university walls and gates are not just structures in space but symbols of power, authority, and hierarchy. In China, a university is considered a community of high prestige and reputation where knowledge is generated and where, in Xi's (2016) words, humans are shaped intellectually and ideologically. It is the center of knowledge and ideological education. The walls mark the boundary of this center, just as the city walls serve to mark the boundaries of various social

groups. The university walls with gates serve to delineate insiders and outsiders. So the university websites often portray walls, as illustrated by the websites of Tian Jin University, South China University of Technology, and University of National Defense, just to name a few. A university is at once open and shut, open to the insiders who enter through the open gate, but a restricted physical site for the outsiders who are barred by the walls and the closed gate, sustaining order within the university. As Tang (2011) has pointed out, the walls and gates "imply power, esteem, and stability of Chinese universities" (p. 427), a point Tang brings up but does not pursue in her discussion of using university websites as marketing strategies.

Hierarchically Mapping Virtual Sites of Chinese Universities: A Summary of Content Functions

As my above discussion suggests, Confucianism helps us classify content features on Chinese university websites and these features serve various rhetorical and social purposes. The Chinese university websites could also be "spaces"—virtual sites with their own images, texts, and arguments. As virtual spaces, they offer a unique venue for us to interpret the connections between Confucianism and the visual and verbal compositions on the websites.

These Web content features are actually related to each other in terms of underscoring the CPC leadership in China's institutions of higher education: The political/national agendas are prioritized on the university websites; university history/tradition historically legitimize the current political/national agendas; political leaders directly provide the CPC leadership by giving instructions; large groups of people practice the CPC ideologies; and university campuses, supposed to be open spaces, are enclosed with walls symbolizing social hierarchies as assigned by the CPC and the government.

By taking a cue from Li's (2017) and Chen's (2017) creative use of a traditional Chinese concept of "Nine Regions" represented by nine concentric circles, we can map the virtual sites of the Chinese universities—the five content features—to the ancient Chinese diagram of nine regions. Figure 1 illustrates the locations of these sites in five concentric circles.

The national/political agendas occupy the center of the circles; university history/tradition take the next

circle as the site where the political/national agendas are justified historically; portrayals of important people possess the next circle as the site where the leaders inspect university work to ensure the political/national agendas are implemented; large groups of people show up in the next circle as practitioners of the CPC ideology; and campus buildings and structures enjoy the peripheral circle as the site which encloses social elites who implement the political/national agenda.

IMPLICATIONS FOR PRACTITIONERS

In this article, I have shown that Confucianism influences the content features on these Chinese university websites and that these features serve various rhetorical and social purposes to represent the universities. Specifically, the results indicate that, to a large extent, Chinese university websites tend to promote the cultural values of collectivism and demonstrates deference to superiors—two important Confucian philosophical notions. My findings should have several implications for practitioners, particularly those who develop websites for their company branches or offices in China.

First, they should define strategies for creating a content hierarchy on the websites.

Chinese government leaders and high-level administrators are heavily propagandized on the

Figure 1. Mapping virtual sites of Chinese universities
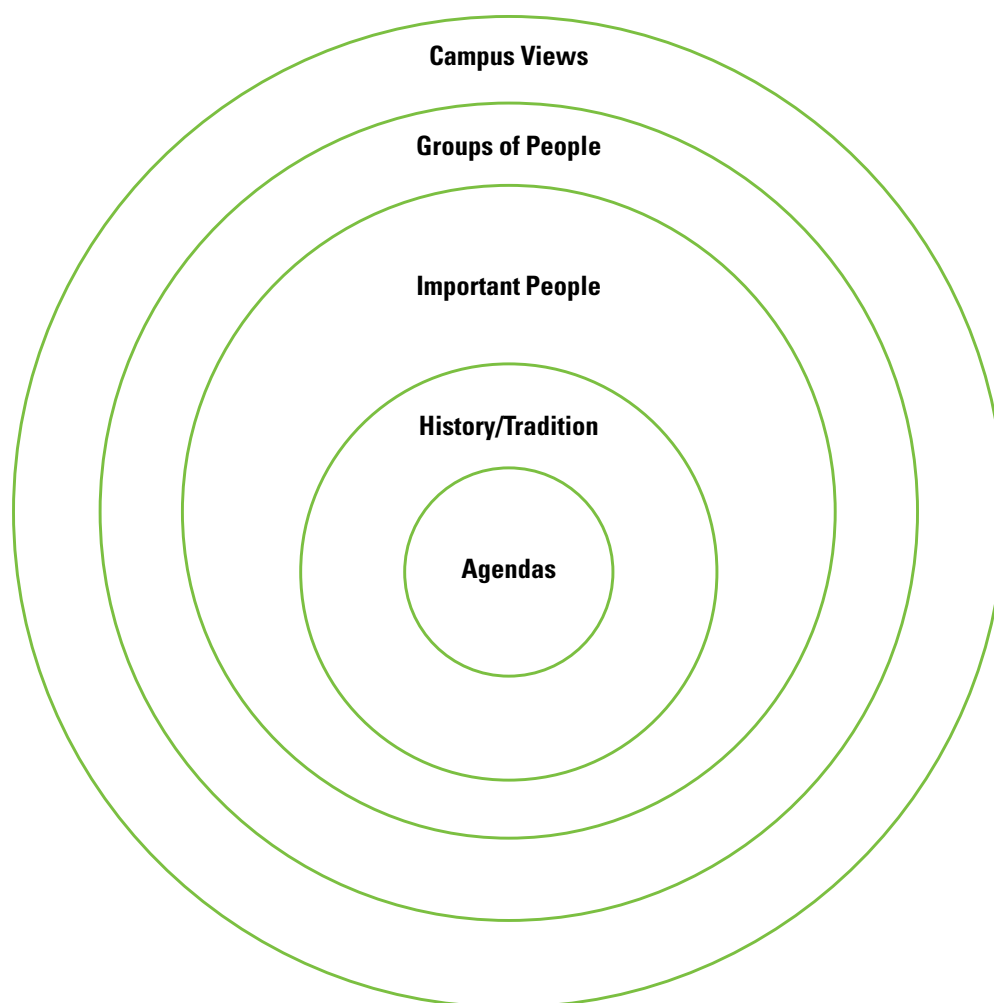
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websites (as they are reported and featured in political /national agendas, news, or campus visits). This involvement seems to be one way that Chinese university website developers manage the websites. In this respect, it is China's version of the "central management system" discussed by Gould et al. (1999), if only to provide and demonstrate standardization of information on the websites. Meanwhile, this involvement suggests that some content is assigned "higher priority" than others. That is, the university websites demonstrate a complex tiered system for granting "privileges" to various content components, thus creating a content hierarchy on the websites. This hierarchy is explicitly reinforced by the functions of the features. The feature that enjoys higher status on the website is highlighted, exhibiting the power and high status endowed by the hierarchy. Therefore, website developers need to rank-order the content and give priority to the content that features collectivism and deference to superiors, like presentations of "overall agendas," authority endorsement, group theme, traditions, and buildings/nature. More specifically, they should give attention to the following five suggestions:

1. Establish a good working relationship with the government, to cover events of nationwide scope like national meetings or to use features that inspire a general sense of pride like national athletic teams wining world championships, or to carry news that features the national, local, or company leaders. Or simply employ features to show the company's interest in some notion of common good such as nationwide efforts to green the country. This strategy means that the information on the organization's website corroborates what is endorsed by the authority. Meanwhile, it demonstrates that the company cares for state affairs instead of just pursuing profits.

2. Feature government leaders, administrators, or high-level management on the website by publishing their talks or showing their pictures, particularly leaders visiting the company. This feature suggests that the company gives sufficient attention to the superiors and their talks. It also shows the company's appreciation for the leaders' inspecting the company and for providing instructions. This approach tells the public that the company shows deference to superiors.

3. Make connections between a company's traditions and its current status. This shows the company has continued to follow for a long time the practices, principles, and beliefs of the company, thus revealing a tradition of endurance of the company's cultural traits. In this way, people can perceive a consistency of the company's long-term reputation, thus believing that the company will continue to enjoy the reputation.

4. Stress themes of collectivism, such as groups of employees, faculty, students, families, or consumers. Using group themes sends the message to society that the company has the collective support. It also suggests that the company is using the collective strength of the masses.

5. Feature company buildings, walls, gates, gardens, and landscapes. By featuring buildings and landscapes, the website developer stresses the reputation and social status of the company. Also the developer highlights the company's function as an area for collective interactions of its members housed within the buildings. In this respect, featuring buildings and landscapes is not unlike the creation of virtual geographic environment in the project of Virtual London as described by Hudson-Smith et al. (2005) and Virtual Kyoto as presented by Nakaya et al. (2010).

CONCLUSION

I have shown that Chinese university websites manifest Confucian notions of collectivism and deference to superiors by featuring political/national agendas, stressing history/tradition, portraying important people, depicting groups, and showing campus views. I have also shown that these features serve various rhetorical and social purposes to represent the universities. However, as I have emphasized in the Introduction, Confucianism is just one of several factors that influences the content features of the Chinese university websites. This study also has its limitations, so more research is needed in the future.

Caution

Again, I urge caution with regard to the impact of Confucianism on the design of the Chinese university websites. First, although in this article I emphasize the two Confucian notions as influences on the Chinese

university website content, I do not mean to suggest that Confucianism is the only force or that other forces, such as social, marketing, Web design, legal, ideological, are absent or unconnected. Actually, as my review of literature suggests, the marketing factor is another force that influences many website designs, but focusing on these forces is clearly beyond the scope of this article. Second, as my analysis of the five categories of the Web content features suggest, CPC ideology is closely connected with the roles of the two Confucian notions in influencing the Chinese university websites. Ever since the Han dynasty (206 BCE–220CE), Confucianism has been a major philosophy that influences generations of Chinese dynastic governments and they have always used it to claim suzerainty over the entire country (Fung, 1997). The current Chinese government is no exception. In other words, the CPC and its ideologies are heavily influenced by traditional Chinese culture of Confucianism, as Zheng (2010) points out in his book. Indeed, the Communist notions of collectivism and deference to the Party and the state have their roots in the Confucian notions of collectivism and deference to superiors, according to Brown (2001), Callis (1959), Reischauer and Fairbank (1960), and Winfield et al. (2000). However, like the previous dynastic governments who used Confucianism as a governing tool, the current Chinese government seems to employ Confucianism, particularly its notions of collectivism and deference to superiors, as an ideological and rhetorical strategy for demanding the universities to design their websites in such a way as to show deference to the CPC leaders and its ideologies. In this case, the CPC uses Confucianism, in Ching's (1997) words, "as a double-edged sword" (p. 65). That is to say, while it lends support to the websites that highlight the CPC ideologies and thus legitimize the ideologies, it suppresses others that do not show deference to the ideologies.

Meanwhile, I must also note that we should not assume invariance of local cultural effects, because as business becomes increasingly global, international communication has become a more fluid and individualized practice. Intercultural exchanges have taught communicators to use communication strategies and cultural conventions from different cultures. Many website developers from non-Western regions, such as Asia, have adopted some of the Western cultural assumptions in developing websites (Kim et al., 2009). Meanwhile, as Kjeldgaard and Askegaard (2006) have pointed out, the globalizing forces do not diminish the impacts of local cultures on Internet communication.

Limitations and Suggestions for Future Research

I must also point out that the results of this study are limited in significance because the 42 Chinese universities, though the top universities in China, are only a small portion of the 2,500 some universities in China. Nonetheless, the small portion I have analyzed clearly demonstrates the extent to which Confucianism affects the design of the university websites. This small portion reveals the relationships between Confucianism and Chinese university website design.

In addition, the data used in this study are not longitudinal, but only from one point in time, i.e., spring of 2018. Therefore, they reflect the features on the Chinese university websites as they appeared in spring of 2018. Probably, the results are somewhat limited in scope; thus, I propose that we should look at the results in context and interpret the significance of the results as limited to one specific point in time. In future research, we can expand studies to cover Chinese businesses and organizations and more Chinese universities, perhaps 20 of each from each province, over a period of five years, as Callahan and Herring (2012) performed their study of the webpages of 1,140 universities from 57 countries over five years. We might also examine presentations of information on Western university websites as a foil against which we might foreground patterns in the design of Chinese university websites. In addition, we could also examine the extent to which university websites in other Confucianism-dominant countries and regions are influenced by the two Confucian philosophical notions. All these studies should sharpen our understanding of Chinese university websites as shaped by Confucianism. Finally, it must be emphasized that, despite its limitations, this study serves as a small window into the many relationships between Confucianism and Chinese university websites.

ACKNOWLEDGMENTS

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Inform or Persuade? An Analysis of Technical Communication Textbooks

By Regan Joswiak and Mike Duncan

ABSTRACT

Purpose: We examined how 10 best-selling technical communication textbooks delineated "informative" and "persuasive" purposes in discourse and, in response, suggest a more effective pedagogical alternative to this typical division that instead consistently emphasizes the rhetorical nature of all communication.

Method: We conducted a semantic analysis of 10 best-selling technical communication textbooks and present findings regarding the appearance of terms related to "informative" and "persuasive" concepts in three types of documents or genres: general discussions, reports, and presentations. To demonstrate the problematic findings in these books, we also examine and summarize recent literature in rhetoric and technical communication.

Results: Overall, a delineation of some sort between "informative" and "persuasive" communication was typically present, which—as literature in rhetoric and technical communication shows—contradicts practitioners' roles as persuasive communicators. While some of the examined textbooks emphasized persuasion in their general discussions, this emphasis became inconsistent when they discussed oral presentations, and the genre of report-writing in particular lacked discussion about its persuasive elements.

Conclusion: We recommend a more complex, rhetorical, and consistent understanding of discourse that rejects an artificial divide between "informative" and "persuasive" in future technical communication textbooks and editions, especially in regard to all workplace communication.

Keywords: informative, persuasive, pedagogical theory, rhetorical theory, academy-industry conflicts

Practitioner's Takeaway:

- The common division between "informative" and "persuasive" discourse in technical communication textbooks ignores a substantial shift in rhetorical theory since the early 1970s that regards all communication as persuasive to some degree—including texts that claim to be "informational."
- The discourse divisions and overall inconsistent discussions about documents present in Johnson-Sheehan's (2018) *Technical Communication Today*, the primary text for the Society for Technical Communication's Foundation Certification, fail to provide practitioners the rhetorical, persuasive perspectives that are necessary in their roles as technical communicators.
- The writers of future editions and new textbooks, as well as teachers of technical communication, should reconsider the use of these distinctions in favor of a more holistic rhetorical treatment of technical communication.

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INTRODUCTION

Students in technical communication are often taught to view all discourse rhetorically; persuasion, according to instructors, is an essential part of communication both inside and outside the workplace. However, equally often, students are also taught that there is a difference between "informing" and "persuading." We submit that not only is there a dated conflict in the field between these two actions and concepts, but there is also a serious issue between these terms and technical communication pedagogy. We share Miller's (1979) concern that "our pedagogy is weakened by submerged inconsistencies and contradiction" (p. 616) and, as a result, we explore these problems by closely examining 10 best-selling technical communication textbooks to analyze how the authors define and discuss these key terms. We then argue that a more consistent, theoretical, and practical presentation of rhetorical discourse in technical communication textbooks—namely, one that emphasizes the persuasive nature of all communication, including the seemingly "informative"—is needed to encourage students to view discourse through a rhetorical lens and to also better prepare them in their future roles as professional, persuasive communicators.

A BRIEF HISTORY OF DISCOURSE DIVISION

Dividing discourse by purpose is as old as Cicero's (55 BCE/2001) *De Oratore*, which was an oversimplification of complex speeches that often performed all three "offices" of instruction, pleasure, and persuasion. Such divisions were convenient because they rendered rhetoric easier to understand and teach; this quality was not lost on the various later developers of the "modes of discourse," which can be traced directly to Latin rhetoric instruction, and were first codified in English in the 19th century. With the division of discourse into the four categories of narration, description, exposition, and argument, the complexities of writing were distilled into four neat pedagogical boxes, three-quarters of which did not contain any argument or persuasive element. The popularity and decline of these divisions in English writing pedagogy were well documented by Connors (1981), and his closing words are as valuable today: "The real lesson of the modes is that we need always to be on

guard against systems that seem convenient to teachers but that ignore the way writing is actually done" (p. 455).

But pedagogical efficiency was not the only possible motive for dividing or classifying discourse. As Manolescu (2007) described, Campbell's 1776 *Philosophy of Rhetoric* created a special "factual" category for testimonial evidence because he wanted the Christian gospels to be treated as factual rather than as persuasive. In a different but parallel way, as explained by Harned (1985), Bain's 1866 landmark *English Composition and Rhetoric*—whose prescriptive compositional structures make our modern technical communication textbooks seem free-form in comparison—was driven by association psychology and the premise that "all minds think alike" (p. 50) and, accordingly, that all students could be taught mechanistically through modes. These two stances—that some discourse gets waved through as innocent of persuasion and that rigid theory rather than practice should drive pedagogy—are particularly problematic now, however, because of the ascent of the rhetoric of science subfield that has shown how the supposedly objective practice of scientific research is inherently rhetorical (Bazerman, 1988; Gross, 1996; Kuhn, 1962; Toulmin, 2003).

The issue of discourse categorizations surfaced again with Kinneavy's (1971) *A Theory of Discourse* and the responses to his work. Dividing his book's chapters to separately examine each aim, Kinneavy discussed reference discourse, an emphasis on reality; persuasive discourse, an emphasis on the decoder or audience; literary discourse, an emphasis on the product; and expressive discourse, an emphasis on the encoder or communicator (pp. 38–39). Kinneavy argued that while these different purposes and their uses need to be studied separately, as "each of these uses of language has its own process of thought," the "aims overlap just as the modes of discourse [overlap]" (p. 40). He also emphasized the prominent role of persuasion in communication during his introduction to persuasive discourse, stating, "it is doubtful if any area of discourse is immune to persuasion" (p. 218).

Kinneavy's (1971) chapter on expressive discourse underwent the most scrutiny, as critics found the distinction of the aim and the analyses used to demonstrate it questionable. Freeman (1973), for example, noted that Kinneavy attempted to explain the aim since it "obviously intrudes on, influences,

and incorporates other kinds of discourse," but the chapter was "more tentative" than others (p. 231). He also pointed to Kinneavy's analysis of *The Declaration of Independence* as an expressive document and how "no one would deny the manifest self-expression of the desires of a people in this document, but it is also informative, certainly persuasive, and maybe a bit exploratory" (p. 231). O'Banion (1982) argued, similarly, that because Kinneavy ignored the rhetorical process of creating a text and instead developed a discussion that centered on static texts, there became "an unfortunate separation of the kinds of discourse," with *The Declaration of Independence's* persuasive elements being ignored (p. 199). Fulkerson (1984) added that the large structure of the document is deductive, since it contains conclusions drawn from premises, and noted that Kinneavy himself listed deduction as a feature of scientific discourse (a subcategory of reference discourse), which undermines his own analysis of *The Declaration of Independence* as expressive discourse.

Kinneavy's (1971) claim about a text's purpose (or aim) determining its structure was also considered problematic. To demonstrate issues with Kinneavy's claim, Fulkerson (1984) examined Golding's "Thinking as a Hobby" and explained that the essay is similar in structure to a scientific text, but "uses the classificatory mode in the service of exploratory or expressive aims" (p. 48). Fulkerson concluded, "Clearly then 'aim' in the broad sense does not determine structure, since several discourses with the same structure may have very different aims, and since pieces with the same general aim may have very different structures" (p. 48). As others have also discussed (Knoblauch & Brannon, 1984; Walzer, 1991), the taxonomic view that Kinneavy aligned with—the perspective that connects purpose to genre and, as a result, treats a text's features as identifiable qualities of that purpose—is questionable. Knoblauch and Brannon (1984), in particular, challenged the taxonomic view and the generic purposes that classical rhetoric focuses on; instead, they argued that writers respond to multiple purposes, and "writers evolve and invoke operational purposes in the course of writing, specific and localized motives for choosing one sort of information over another" (p. 67).

Like Knoblauch and Brannon (1984) and their criticisms of generic purposes, Keith (1997) also cautioned against discourse classifications and considered the traditionally taught purposes of communication, or *officia*, to be "too crude for more practical purposes," and warned that "they invite a serious mistake" (p. 305). Keith argued that the distinctions between persuasion, instruction, and entertainment can fall prey to practices that impact the effectiveness of the discourse, particularly with instruction: "Sometimes, instruction, or as we might say 'informative communication,' is contrasted with persuasion, and the logic criticized above is engaged: 'Well, I'm just trying to convey information, nothing more, so the subject matter (information) will dictate all the important choices'" (pp. 305–306). The mistake here, according to Keith, is that other important considerations or limitations, such as audience, roles, and ethos, can be ignored with the classification of "informative" communication.

POST-KINNEAVY CONFLICT

If anything, Kinneavy's (1971) work and the criticisms of it, and the criticisms of discourse classifications, demonstrate the problem with our field's discussions of aim and purpose: While no one disagrees that the informative and persuasive aims of discourse overlap (Kinneavy, 1971, p. 60), there is nonetheless an ongoing issue with textbook authors demonstrating how the aims overlap. Ultimately, Kinneavy's treatment of purpose encourages a categorization of discourse that dissuades the reader from seeing the discourse beyond the categorization. As O'Banion (1982) argued, "By making only a few attempts at indicating the interrelationship of the discursive aims, and by treating each aim so independently that each chapter seems like a new beginning, Kinneavy unfortunately isolates what should be synthesized" (p. 200).

The most troubling aspect of this issue, however, is the conflict that occurs when instructors emphasize the rhetorical nature of all communication to students and then persist in distinguishing between "informative" and "persuasive" documents. Because all communication is rhetorical to some degree (Kinneavy, 1971, p. 218), the common divisions between informative and persuasive discourse are unhelpful and impractical, as writers "would be better off seeing themselves as persuasive" (Keith, 1997, p. 306). Kynell (1994) partially explored this problem in textbooks by studying five editions of Lannon's textbook *Technical*

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Writing to determine how the field of technical communication has evolved over time, concluding that the discipline has shifted throughout the years to emphasize more persuasion and audience analysis. However, no other explorations such as Kynell's (1994) exist in the literature.

From the perspective of rhetorical theory, the "all communication is rhetorical" stance is firmly in the so-called "big rhetoric" camp, defined well by Schiappa (2001) as "the theoretical position that everything, or virtually everything, can be described as 'rhetorical'" (p. 200). We hold to less than that—namely, that all communication is rhetorical, not everything—but both positions came under fierce critique in the 1990s. Schiappa's article provided a solid summation of the major debate, as well as the origins of "big rhetoric" in the seminal work of Weaver (1985) and Burke (1969), and he dismissed the objections of the "little rhetoric" critics, especially the common "if everything is rhetoric, nothing is" counterargument (pp. 268–272). Fourteen years later, McKerrow (2015), reviewing current rhetoric research, portrayed Schiappa's (2001) piece as a decisive final defense (pp. 154–156). In our experience, however, there is still much informal debate on this issue among rhetoricians, especially technical communication experts.

RESEARCH DESIGN

For our analysis, we selected 10 technical communication textbooks to examine how informative and persuasive discourse were discussed and defined. As Matveeva (2007) stated, "textbooks give instructors various pedagogical tools and materials for classroom discussions and activities, and textbooks are essentially what students buy, read, and use in learning. At least to a significant extent, textbook contents form technical writing pedagogy" (p. 151). Because textbooks "form technical writing pedagogy" (p. 151), it is pertinent to examine technical communication textbooks to develop a greater understanding of what technical communication students are learning.

What students are learning also has implications that extend outside of academia, as it is likely they transfer the information into other professional environments. According to Brady (2007), who conducted a qualitative study about what scientific and technical communication students used from

their academic settings as they transitioned into their workplace environments, students can rely on the problem-solving and composing strategies they were taught from their textbooks and educators as they find themselves in new, unfamiliar professional environments. Given these implications, an analysis of what technical communication students are taught about informative and persuasive approaches is overdue.

The textbooks we selected for this study were published between 2012 and 2018. All of the textbooks have a generalist focus, and the selection was based on longevity and popularity. To determine the popularity of the textbooks, we referred to the sales-ranking system of Amazon.com for a list of best-selling textbooks under the category of "Best-Sellers in Technical Writing Reference." Under this category, Amazon lists 100 best-sellers, and the list is updated hourly. Because the category includes reference books and textbooks beyond a generalist focus, we referred to the list of textbooks that Boettger and Wulff (2014) used for their analysis, which was based on Wolfe's (2009) analysis, for textbooks to compare to Amazon's category. We then selected the textbooks from these studies that appeared on Amazon's best-selling list, which demonstrates their continued popularity since the publication of the authors' analyses.

Most of the selected textbooks are in the 9th edition or later, which shows longevity in the classroom, particularly because all also appeared in Boettger and Wulff's (2014) or Wolfe's (2009) studies. We would like to note that because Amazon updates the rankings hourly—and because the category includes textbooks beyond a generalist focus, reference material, and different editions of the same textbooks—the specific ranking of each textbook is not critical to our study, though we provide the rankings for reference (Table 1). The authors who consistently ranked within the top 15 during this study were Markel (2014); Lannon and Gurak (2016); Oliu et al. (2016); Anderson (2018); and Tebeaux and Dragga (2018). The remaining authors ranked in the top 25–75. The list was last accessed on August 26, 2018.

To gain insight on how informing and persuading is taught to technical communication students, our textbook analysis was semantic. In the selected textbooks, we looked for terms such as "inform," "informative," "informational," "persuasive," "persuade," "persuasion," and other permutations by examining

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Table 1. The 10 textbooks examined

Author	Title	Edition	Publication	Amazon Rank
Anderson, P.	*Technical Communication: A Reader Centered Approach*	9th	2018	10
Gerson, S. J., & Gerson, S. M.	*Technical Communication: Process and Product*	9th	2017	44
Johnson-Sheehan, R.	*Technical Communication Today*	6th	2018	69
Kolin, P. C.	*Successful Writing at Work*	11th	2016	56
Lannon, J. M., & Gurak L.	*Technical Communication*	14th	2016	9
Markel, M.	*Technical Communication*	11th	2014	3
Oliu, W. E., Brusaw, C. T., & Alred, G. J.	*Writing That Works: Communicating Effectively on the Job*	12th	2016	4
Pfeiffer, W. S., & Adkins, K. E.	*Technical Communication: A Practical Approach*	8th	2012	27
Riordan, D. G.	*Technical Report Writing Today*	10th	2013	73
Tebeaux, E., & Dragga, S.	*Essentials of Technical Communication*	4th	2018	6

indexes, the table of contents, and chapters, including examples and checklists. Then, we created categories to make distinctions between how the authors discussed the terms. We categorized the data as follows:

1. General discussions, which includes how the authors introduced "persuasive" and "informative" elements, definitions, or documents.
2. Reports, which includes discussions about informative/informational reports, progress reports, and scientific or empirical research reports.
3. Oral presentations, which includes discussions about "informative" or "persuasive" presentation types.

The reason for such categorizations is because of a distinctive pattern that emerged as we searched for the terms in the textbooks; it was apparent throughout the course of the analysis that, in addition to the introductory materials dedicated to the concepts, these terms were frequently connected to types of reports and oral presentations.

RESULTS

In the following sections, we provide the results and analysis of the discourse in each of the three categories.

General Discussions

The analysis of the textbooks revealed many differing discussions about "informing" and "persuading." Two

of the textbooks (Kolin, 2016; Tebeaux & Dragga, 2018) emphasized persuasion rather than creating and defining a category for informative documents. Kolin (2016), for example, stated that there are six basic functions of writing: "(1) to provide practical information, (2) to give facts rather than impressions, (3) to supply visuals to clarify and condense information, (4) to give accurate measurements, (5) to state responsibilities precisely, and (6) to persuade and offer recommendations" (p. 20). Rather than divide the information further, however, he emphasized persuasion's importance. For example, he stated, "Persuasion is a crucial part of writing on the job. In fact, it is one of the most valuable skills you need in the business world" (p. 23). Similarly, Tebeaux and Dragga (2018) made the statement that "all writing is persuasive: It must convince the reader(s) that the writer has credibility and that the writer's ideas have merit" (p. 226). The other textbooks did not communicate a position as easily distinguishable, however.

Five of the textbooks (Gerson & Gerson, 2017; Johnson-Sheehan, 2018; Lannon & Gurak, 2016; Oliu et al., 2016; Riordan, 2013) divided persuasive information from other forms of writing. Riordan (2013), Lannon and Gurak (2016), and Gerson and Gerson (2017) discussed how communication has the purpose to inform, instruct, or persuade. Despite these divisions, Lannon and Gurak stated, "Almost all workplace documents, to some extent, have an *implicitly*

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persuasive goal" (p. 34, emphasis in original). Riordan, however, asserted that "most writers use technical writing to inform" (p. 6) and failed to discuss whether there is an overlap between informative and persuasive goals. Because he stated that technical writing is used to inform—with the implication that this is its purpose—the overlap is even less clear. Additionally, in Riordan's "Worksheet for Planning" checklist, he posed a question: "Why do I need to convey that message? To inform? To instruct? To persuade?" (p. 66). The lack of a combination option leaves the impression that the types are completely separate.

Under Gerson and Gerson's (2017) "Determining Your Goals" section, they listed similar categories: inform, instruct, persuade, and build trust and rapport. The most problematic section is when the authors gave examples of informative communication. They stated, "Often, you will write letters, reports, and e-mails merely to inform" (p. 38). With this statement, the authors created a false division between informing and persuading, and ignored the implicit persuasion in these types of correspondence. Oliu et al. (2016) communicated a similar division, though they only made distinctions between instruction and persuasion. For example, when illustrating different types of writing, they stated, "Although the purpose of the maintenance manual is to instruct rather than to persuade the audience, its organization differs from that used for the sales brochure" (p. 38). Such statements fail to communicate persuasion's role in documents.

Unlike the other four authors, Johnson-Sheehan (2018) introduced informative and persuasive categorizations through verb lists in his first chapter when he discussed how to create a purpose statement. He provided a list of action verbs under each of the headings of "Informative Documents" and "Persuasive Documents" that expressed the purpose of the document, and he also delineated between plain and persuasive style. In a later chapter dedicated to these styles, Johnson-Sheehan explained that "there are times when you will need to influence people to accept your ideas and take action" and "in these situations persuasive style allows you to add energy and vision to your writing and speaking" (p. 450). However, he also noted, "In a sense, all forms of scientific and technical communication are persuasive in some way" (p. 367). While it is important that Johnson-Sheehan made a distinction between the different tones and styles of various documents,

explaining the topic in these ways confuses the issue because the first chapter prepares the reader for an unnecessary division between the two, while later chapters discuss an overlap between the terms.

The remaining textbooks (Anderson, 2018; Markel, 2014; Pfeiffer & Adkins, 2012) used diverse language to describe the functions of documents and used terms other than "informative" or "persuasive." For example, Anderson (2018) categorized a document's function with the terms "useful," which he stated dominates instructions, and "persuasive," which he stated dominates proposals. However, according to Anderson, "Every workplace communication must possess both to succeed" (p. 9). While Anderson made the connection between the two clear, this connection was not explicitly stated in other textbooks.

Pfeiffer and Adkins (2012) provided a "continuum" of determining a purpose, which was between a "neutral, objective statement" and a "persuasive, subjective statement," and stated a writer's purpose will "fall somewhere within this continuum" (p. 38). They offered examples of neutral messages, such as a "letter inviting the reader to an event" (p. 164), but this example is not a neutral request. In an invitation to an event, the language itself may not be strongly persuasive (which is how they defined the persuasive category), but all invitations are inherently persuasive because of their purpose: to entice the reader to attend an event, or at least to acknowledge the event and account for its existence.

Markel (2014) provided another example of delineating between informative and persuasive approaches: He created categories for verbs that depend on the reader's purpose, differentiating between "communicating verbs" and "convincing verbs." Markel described the verbs as "those used to communicate information to your readers and those used to convince them to accept a particular point of view" (p. 108). Markel added, "Sometimes, of course, you can have several purposes" (p. 108). However, creating these distinctions misleads readers into thinking that they can create documents that are free from persuasion.

Reports

Like the general discussions of informative and persuasive information, the textbooks we examined had vastly different perspectives about the persuasive status of reports. Specifically, the terms we searched for emerged in informative/informational reports, progress

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reports, and scientific or empirical research reports. These discussions ranged from directly stating that these reports are persuasive documents to only describing them as informative in nature.

All of the textbooks that discussed "informational" or "informative" reports discussed them without mentioning how the documents operate on a persuasive level. Pfeiffer and Adkins (2012), Markel (2014), Lannon and Gurak (2016), and Gerson and Gerson (2017) devoted sections to reports, and all explained how reports inform the audience. For example, Pfeiffer and Adkins (2012) described informative reports as "a means of conducting daily operations and record keeping in organizations" (p. vii), and Lannon and Gurak (2016) stated that "these reports help keep an organization running from day to day by providing short, timely updates" (p. 473). Markel (2014) described them similarly: "Informational reports share one goal: to describe something that has happened or is happening now. Their main purpose is to provide clear, accurate, specific information to an audience" (p. 446). Finally, Gerson and Gerson (2017) stated, "Informational reports focus on factual data. They are often limited in scope to findings: 'Here's what happened'" (p. 403). Collectively, these authors emphasized how these reports provide or record information and excluded persuasive terminology.

Interestingly, even though Pfeiffer and Adkins (2012) neglected to discuss informative reports in general as operating persuasively, they did make this distinction with progress reports: "Progress reports contain mostly objective data. Yet they are sometimes written in a persuasive manner. Progress reports tell your supervisor or the client that your project is on task, on time, and on budget" (p. 355). It should be noted that the authors stated progress reports are "sometimes" written this way, but not always. This definition differs greatly from Tebeaux and Dragga's (2018), which stated, "Keep in mind that proposals and progress reports are persuasive documents. You write to convince your reader of the merit and integrity of your work" (p. 222). Anderson (2018) provided a similar discussion with progress reports and stated that "generally, you want to persuade your readers that you are doing a good job" (p. 456). In his "Writer's Guide for Revising Progress Reports" at the end of the chapter, he also asked, "Does your draft include each of the elements needed to create a report that your readers will find to be useful and persuasive?" (p. 457).

Gerson and Gerson (2017) also used the report as an example of persuasive communication, though they only did so in a chapter under their "Communicating to Persuade" section, and stated, "Maybe you will write your annual progress report to justify a raise or a promotion." (p. 38). In their progress report chapter, they stated that the document can "inform your reader(s) of any difficulties encountered" (p. 420). Given the persuasive nature of progress reports, the discussion would have been more effective if the authors included persuasion under the report's description. This said, Gerson and Gerson, along with Tebeaux and Dragga (2018) and Anderson (2018), are the only authors to include how progress reports are persuasive. Other authors either stated that the report is a document that "informs" its audience about a project (Johnson-Sheehan, 2018; Kolin, 2016; Lannon & Gurak, 2016; Oliu et al., 2016; Riordan, 2013) or defined it without using informative or persuasive terminology (Markel, 2014).

The authors also discussed scientific reports—lab reports, specifically—or empirical research reports. One author, Anderson (2018), used persuasive terms that appeared in his discussion about empirical research reports. In his "Writer's Guide for Revising Empirical Research Reports," he listed "persuades readers that this research is important to them" and "presents information in a clear, useful, and persuasive manner" (p. 427) on his checklist. The majority of the authors who used informative or persuasive terms, however, discussed lab reports (Markel, 2014; Pfeiffer & Adkins, 2012), and one author (Johnson-Sheehan, 2018) discussed both lab reports and scientific reports separately.

While Johnson-Sheehan (2018) discussed both scientific reports and lab reports, he presented contradicting information in his style sections for each. In the "Brief Reports" chapter, which contained both progress reports and lab reports, he described the style of the documents: "Generally, brief reports follow a plain style and use a simple design. These documents are mostly informative, not overly persuasive, so you should try to keep them rather straightforward" (p. 298). Then, in a separate chapter titled "Formal Reports," he discussed scientific reports. Under the heading "Using Plain Style in a Persuasive Way," which followed the definition of scientific reports, he stated, "Reports are persuasive in an unstated way, putting the emphasis on the soundness of methodology, the integrity of the

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results, and the reasonableness of the discussion" (p. 340). Because scientific reports and lab reports share the same structure for reporting information, the persuasion that he discussed as a part of the methodology, results, and discussion for scientific reports should also have been discussed for lab reports. Furthermore, he described lab reports (and progress reports) as having a plain style and failed to mention how plain style can be used persuasively with lab reports, though he did so with scientific reports, as though they are unrelated documents.

Markel (2014), however, stated the lab report's persuasive function: "At first glance, a lab report might appear to be an unadorned presentation of methods, data, and formulas. It isn't. It is a carefully crafted argument meant to persuade an audience to accept your findings and conclusions" (p. 516). He also stressed the importance of persuasion for the scientific community. According to Markel, if scientists and engineers "want to contribute to their fields, they must convince readers that their findings are valid. For this reason, the ability to write clearly and persuasively is both necessary and valued in the sciences and engineering" (p. 517). Pfeiffer and Adkins (2012), however, offered a description opposed to Markel's (2014): "Lab reports record and communicate the results of laboratory studies; therefore, they are primarily informative" (p. 358). Although they stated lab reports are "primarily" informative—implying a potential to be persuasive—they leave persuasion out of the conversation. Because it is common to regard reports as informative documents, it is noteworthy that only Markel and Anderson (2018) defined lab reports as persuasive documents, and only Johnson-Sheehan (2018) defined scientific reports as persuasive documents, though with contradictions.

Oral Presentations

Most of the textbooks separated oral presentations into informative and persuasive categories, regardless of how the authors discussed persuasion in earlier sections or chapters. Pfeiffer and Adkins (2012) and Riordan (2013), however, described presentation techniques without creating informative or persuasive divisions, along with Johnson-Sheehan (2018). Instead, Johnson-Sheehan's "Presenting and Pitching Your Ideas" chapter focused on providing information about presentation considerations and strategies, and he stated that "even when you aren't making a presentation or pitching new ideas, you will still need to speak clearly and

persuasively" (p. 554). When he discussed defining a presentation's purpose, he provided examples such as, "My goal is to persuade elected officials that climate change is a looming problem for our state," and then stated, "For more help on defining your purpose, go to Chapter 1" (p. 556). If students refer back to Chapter 1, however, they encounter the divisions between informative and persuasive documents, which then transfers this dichotomy to speech.

Four other textbooks (Anderson, 2018; Gerson & Gerson, 2017; Lannon & Gurak, 2016; Markel, 2014) implied or stated that readers could have a dual purpose of informing and persuading. Of the four authors, the only one who communicated a clear overlap amongst the four books was Anderson (2018), who used the terms "useful" and "persuasive" to describe oral presentations, as he previously did with written communication in his introductory chapter. He stated that "even the most overtly persuasive presentations" will include information the audience can "use" to make to decisions (p. 355). Additionally, in his "Writer's Guide for Creating and Delivering Oral Presentations" he asked, "What three or four points will your listeners find most helpful and persuasive?" (p. 335).

The other authors who discussed an overlap, however, included problematic statements. For example, Markel (2014) suggested that readers consider the purpose of the presentation and asked readers, "Are you attempting to inform or to both inform and persuade?" (p. 21). However, this implication—that presentations can only be informative—discourages readers from considering persuasive strategies, or even from being conscious of the possibility. Similar issues surfaced in Lannon and Gurak's (2016) *Technical Communication*. The authors stated that if the reader's "primary purpose" (p. 577) is to inform or persuade, then there are criteria for each in terms of what information to include. However, there was no explanation about the possibility of a combination of purposes and, instead, they suggested the reader select one.

Gerson and Gerson's (2017) chapter contained more problematic explanations of purpose. They stated, "Almost every oral presentation has an element of argument/persuasion to it—as does all good written communication. You will usually be persuading your audience to do something based on the information you share with them in the presentation" (p. 513). However, in addition to stating that "almost every" presentation

contains persuasion, they also divided presentation goals into inform, instruct, or persuade. The authors' division raises the question of why these categories were included if, as they stated, persuasion is important in presentations. The distinction only makes determining a purpose more challenging, rather than more achievable.

The remaining three authors (Kolin, 2016; Oliu et al., 2016; Tebeaux & Dragga, 2018) discussed categories without specifying an overlap of informative and persuasive goals. Kolin (2016) stated, "Divide your presentation into major sections that best accomplish your objective, whether to inform, to persuade, or to document" (p. 636). Similarly, Oliu et al. (2016) suggested, "State and explain your key points—points that will inform or persuade your audience" (p. 492). With Tebeaux and Dragga's (2018) oral report section, this delineation appeared in their discussion about organizational techniques: "This method will help your audience follow your ideas if you are giving an informative speech, an analytical speech, or a persuasive speech" (p. 301). These types of speeches—and how they are different or similar from one another—however, were not explained further.

RHETORICAL IMPLICATIONS

Our analysis revealed many differing and contradicting ways informative and persuasive communication were handled in these textbooks. While some authors, such as Tebeaux and Dragga (2018) and Kolin (2016), emphasized persuasion in their general discussions, this emphasis became inconsistent when addressing oral presentations. Most authors excluded persuasion from report discussions; save for Tebeaux and Dragga (2018), Gerson and Gerson (2017), Anderson (2018), and, briefly, Pfeiffer and Adkins (2012) with progress reports; and only Markel (2014), Anderson (2018), and Johnson-Sheehan (2018) with scientific or empirical research reports.

We should note the possibility that the problematic logic and false dichotomy between informative and persuasive purposes may not be the product of firm ideologies or careful planning but of questionable conception and execution, which is ironic given that the subject of the textbooks is effective technical communication. That said, there is also an acknowledged gap between academy and industry, with academics and practitioners having divergent interests within the

field (Boettger & Friess, 2016; St.Amant & Meloncon, 2016). However, to assume that the contradictions and problematic discussions within some of the textbooks are only because of differences between academics and practitioners would be an oversimplification. We do feel that the conflict between academy and industry is an important point to raise, however, because as Boettger and Friess (2016) discussed, it is important for practitioners to have a more active voice and role in the field's scholarly production; the differences between what practitioners find relevant and what academics believe is relevant cannot be ignored.

Regardless of what caused the false dichotomies, the results of our analysis are significant for practitioners and students for several reasons. Johnson-Sheehan's (2018) *Technical Communication Today* is the "body of knowledge" that candidates use for the Society of Technical Communication's Foundation Certification, also referred to as the Certified Professional Technical Communicator (CPTC) designation. Our results indicate an issue for practitioners seeking this certification since *Technical Communication Today* contained the discourse divisions that are impractical for practitioners to be using; these divisions, however, are inescapable throughout the certification process because of the textbook's material being the foundation for the study guide and exam. The *CPTC Study Guide's* criteria for a successful candidate under the "Written Communication" category, for example, included the ability to "explain when and how to use plain and persuasive styles" (Society for Technical Communicators, 2016, p. 4). We must ask if these are the strategies that we want CPTC practitioners to be learning.

The textbook contradictions ultimately undermine the practitioner's role. As Henning and Bemer (2016) stated, "Technical communicators do more than simply communicate; they employ particular modes of thinking to generate communication because they have common, specific goals" (p. 332). The many roles of technical communicators include deciding how to present ideas effectively to an audience and, to achieve this goal, technical communicators need to view discourse from a rhetorical, or persuasive, perspective. Ornatowski (1992) noted, "*Technical writers are always inevitably rhetoricians* precisely because they are 'useful' to employers and their writing is 'effective'" (p. 100, emphasis in original). Because of this role, technical communicators must possess an awareness of their

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rhetorical purpose for composing, the wide variety of possible stakeholders in their audience, and the full range of argumentative choices available and their effects (Orantowski, 1995, p. 579).

The collaborative nature of the technical communicator's role is also essential in creating effective deliverables (Hart & Conklin, 2006; Henning & Bemer, 2016; Rainey et al., 2005). Practitioners need to negotiate, problem-solve, and persuade to obtain the information they need from their colleagues and subject-matter experts, which is demonstrated in Brady (2007) and Wilson and Ford's (2003) interviews with practitioners. This collaborative role, therefore, calls for a pedagogy that addresses rhetorical skills and knowledge of the subtle persuasive strategies evident not only in writing, but in communication holistically. The authors who categorized texts as either informative or persuasive focused on deliverables and written communication; likewise, many of the authors who acknowledged the importance of persuasion primarily did so with written communication (Gerson & Gerson, 2017; Kolin, 2016; Markel, 2018; Pfeiffer & Adkins, 2012; Riordan, 2013; Tebeaux & Dragga, 2018). Both groups neglected to discuss the rhetorical nature of interpersonal communication with colleagues, for example, which is an essential aspect of technical communication.

If students are led to believe that communication can be, as Pfeiffer and Adkins (2012) suggested, "neutral" and "objective," or purely informational, then they are not prepared for the more complex aspects of rhetoric that are essential to effective communication. As others in the field have discussed (Dobrin, 1983; Miller, 1979; Ornatowski, 1992; Rutter, 1991), viewing forms of communication as objectively informative is not productive, useful, or desirable, save for those who would conceal persuasion's presence. Furthermore, as Ornatowski (1992) argued, "If writing documents is only a matter of clearly marshalling objective facts and reasonable texts, 'ethical' problems should not arise. Something would either be a fact or not be a fact, be clearly relevant or be clearly irrelevant" (p. 99). Because of the complex intricacies of workplace communication, however, students and future practitioners must consider more than conveying information clearly, neutrally, and objectively for their purpose, whether the communication is an email to a colleague or a report to a manager.

Students must recognize these complexities to address what the communication needs to achieve; if scientific documents are perceived as only informing, then a critical purpose is ignored. As noted by Miller (1979), "Scientific observation relies on tacit conceptual theories, which may be said to 'argue for' a way of seeing the world. Scientific verification requires the persuasion of an audience that what has been 'observed' is replicable and relevant" (p. 616). Ultimately, even communication that seems informational needs to be considered on a persuasive level to create the desired impact on readers. Therefore, it is important to recognize that all writing operates persuasively in either implicit or explicit ways, and "all functional writing, including scientific and technical writing, is rhetorical: writers and readers together create meaning and knowledge through language" (Goldstein, 1984, p. 25). It is also important to recognize the need for consistently communicating purpose to technical communication students to assist them in their roles as effective practitioners.

The idea that all communication operates persuasively, and that no document or utterance just "informs," may be difficult for students to reconcile in both an ethical sense and practical sense. Because technical communicators often encounter ethical dilemmas, the issue of ethics in technical communication has been heavily discussed (see Dombrowski, 2000), and undergraduate and graduate curricula often include chapters, modules, or entire courses in ethics for this reason (Malone, 2011). Despite this emphasis, the ethical dilemmas that technical communicators encounter at work are likely far more than they are prepared for through this curricula; as Dombrowski (2000) discussed regarding the shortcomings of ethical codes of conduct, ethical behavior "cannot be reduced to mechanical conformance to rules, because generalized rules cannot capture the complex contingency of real, particular situations, and because ethical conduct usually involves a heavy measure of personal judgment and decision making" (p. 4). While ethical conduct may be too difficult to capture in text, what we can do, however, is continue teaching students how to critically assess their communication decisions and teach them to be aware from the beginning that not only is all workplace writing rhetorical, but all general workplace communication is as well. Addressing this issue early will be to their advantage, as this guidance not only prepares them for considering

the implications of their communication, but it also prepares them for the collaborative nature of their roles.

Instructors of technical communication have an ethical responsibility to represent the rhetorical complexities of real-world professional environments. To do otherwise is to actively mislead students and, in the process, fail to prepare them for what they will actually encounter in the workplace. As Brady (2007) stated, "What we teach matters" (p. 58). Understanding that all communication is rhetorical enables students' interactions with the text to extend beyond just the information, to include moving the considerations toward whether the information is being effectively communicated to the text's specific audience and "ultimately can inform their practice as they negotiate the fluid rhetorical contexts of the workplace" (Brady, 2007, p. 59).

RECOMMENDATIONS

Out of the textbooks examined, two stood out for avoiding many of the issues we have discussed. Tebeaux and Dragga (2018) excluded discourse categorizations in introductory discussions, instead emphasizing persuasion in reports and general writing. Anderson (2018) also communicated the importance of persuasion throughout general discussions, reports, and presentations. Therefore, these two hit closest to the mark if we had to suggest any of the books, though we will make clear that because Tebeaux and Dragga (2018) included discourse divisions in oral presentations, and because of Anderson's (2018) unnecessary initial "useful" and "persuasive" divisions, the books are not exempt from our recommendations, which follow.

We propose:
1. The distinction between "informative" and "persuasive" discourse should be eliminated. It may be useful to describe a text as "informative," but only as a strategy of persuasion. Students do not need "informative" or "persuasive" categories to determine a rhetorical approach and accomplish their writing goals and, in any case, the division is false and misleading.
2. Persuasion should be discussed with deliverables, written communication, and interpersonal communication between technical communicators, colleagues, and subject-matter experts. We noted a lack of discussion about persuasion with

subject-matter experts in particular as we searched for discourse divisions.
3. Both the subtle and overt persuasiveness of arguments that reports make should be discussed and analyzed. As the centerpiece of many technical writing courses with objective aims, reports are particularly susceptible to the "informative" label.
4. Oral presentations should be linked to the discussions that occurred in other chapters about written texts. For example, if documents are characterized as always being persuasive, then given that oral presentations are based on similar guidelines to those of written documents, presentations merit the same treatment. The instruction presented for each of these forms of communication should be consistent.

We realize it is unrealistic to expect a quick, dramatic change in how this topic is discussed; however, we challenge those in the discipline to provide further clarity for technical communication students—and practitioners seeking certification—in their rhetorical roles. Stating a writer's purpose is "to inform" is not specific enough to help the modern technical writer achieve his or her goal, "because it doesn't take into account where the audience is starting from (with respect to the writer/speaker and the subject matter) and what the writer/speaker wants the audience to do with the information" (Keith, 1997, p. 307).

We believe students need more experience dealing with the thesis of "big rhetoric"—namely, that all communication, including their own writing and speech, no matter how neutral it may appear, has persuasive elements and intentions. By presenting some varieties of technical discourse as "informative," we do them no favor but instead allow for rhetorical manipulation without awareness. The aim of the discipline is to both enable skill and promote understanding of that skill. Technical communication textbooks and curricula could present the relationship between rhetoric, writing, and speech in a more consistent manner that does not shrink away from the persuasive nature of all documents. Doing so will help in guiding our students toward becoming more effective and ethical technical communicators.

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The Pedagogical Opportunities of Technical Standards: Learning from the Electronic Product Code

By Jordan Frith

ABSTRACT

Purpose: The goal of this article is to make the case that technical standards can be valuable educational tools for technical communication teachers. The article argues for the pedagogical value of standards through an examination of one particular standard: the Tag Data Standard, published by GS1. The analysis focuses on areas in which the document could be improved by technical communication practitioners and students.

Method: The data for this article come from the 126-page Tag Data Standard. The standard was inductively analyzed using grounded theory and involved a second coder. The research question that guided this analysis was, "How could this comprehensive standard be improved by trained technical communicators?" The goal is to show how technical standards could be used to provide students with real-world texts to analyze and edit.

Results: The data show the TDS could likely be improved if technical communication practitioners were more involved in the writing process to focus on issues of consistency, audience, and design. The article uses those results to show why standards could be valuable educational tools for teachers.

Conclusion: Standards are a crucial form of technical communication. They are an example of how language shapes the material world. The analysis in this article shows that these crucial documents can be improved by skilled technical communicators and can serve multiple pedagogical goals, including showing students how documents shape materiality and providing students with comprehensive, real-world texts to work with and improve.

Keywords: documentation, pedagogy, standards, technical writing, infrastructure

Practitioner's Takeaway:

- Technical standards are important forms of technical communication.
- Standards are a valuable teaching tool for showing students how texts affect technologies.
- Standards are also publicly available documents teachers can use in the classroom as real-world editing opportunities.

INTRODUCTION

Technical communication often involves writing that supports other operations. Practitioners document software processes, report on user research that influences product design, and strategize content governance. Their work plays a crucial but sometimes unnoticed role in shaping practices across a range of technical artifacts. This article focuses on a different type of technical communication that plays a consequential role in how language shapes the material world: technical standards.

Technical standards have not been a major focus in technical communication research or pedagogy, but this article argues they should be. Technical standards are documents that dictate how materiality is shaped. They prescribe the distance between studs in a house, how contactless payments communicate between card and reader, and how food safety is managed. Behind all of these practices are documents published through various standards organizations, including the International Organization for Standardization (ISO), the GS1, and the World Wide Web Consortium (W3C), to name just a few. These organizations publish specifications designed to work across industries. For example, the IpV4 and IpV6 standards developed by the Internet Engineering Task Force make it so that devices, regardless of manufacturer or ISP, are assigned similarly structured IP addresses (Hinden, 1995). Without a broader industry standard, the Internet would not be able to work as it does. The same applies to many other standards. For example, the Universal Product Code (UPC) and International Article Number (EAN) are what make barcodes interoperable across millions of retail sites (Brown, 1997). Without those standards, much of the global retail economy would not be possible.

These standards are examples of technical communication, even if they have not been a significant research focus in the major technical communication journals. Consequently, this article builds two arguments. The first is that standards should be considered as technical communication and should be an object of research within the discipline. The second

argument is that technical standards can be valuable pedagogical tools in the technical communication classroom. Technical standards offer an opportunity to teach students in concrete ways about how written language shapes the material world. They are also living documents that are publicly available for students to analyze and comprehensively edit to gain hands-on experience with real technical texts. Finally, as the article argues, standards are examples of technical communication students should be trained to write and interact with. Teaching familiarity with standard-writing open up opportunities for employment with various standards-setting bodies.

To make the case for standards playing a more significant role as both an object for research and as a pedagogical opportunity for technical communication instructors, I begin the article by discussing what standards do and the major organizations involved in standards setting. I then discuss technical standards research published in the five major technical communication journals; as I show, the discipline has not focused much on standards as texts, and there is little research I am aware of that treats standards as potential pedagogical opportunities. After the literature review, I then discuss the methods and the data analyzed for this study: the 126-page Tag Data Standard that is a key standard in the Internet of Things. The research question that guided the analysis was, "How could this comprehensive standard be improved by trained technical communicators?" with a specific focus on areas in which the text could be improved as part of a larger classroom comprehensive editing project. The goal of the analysis is not to critique the standard under study, but rather to make two cases: 1) Standards are technical communication that can be improved by trained practitioners, and 2) These texts can be valuable teaching tools because they are technical texts that show how written language impacts the shape of technologies across industries.

Although those two goals are distinct, they are also linked. While the actual job of standards-writer is specialized and tends to be populated by higher-level technical communicators, many novice and mid-level technical communicators must be familiar with how to write to or design for specific standards. Consequently, although only a small fraction of technical communicators will be responsible for writing standards, the ability to deal with inconsistencies

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within existing standards can help students prepare for using standards in the workplace. Even more broadly, the examination of standards in the technical communication classroom provides students with opportunities to work with real-world technical texts in a genre they will likely have to deal with in their careers. And, as a final point, unlike many proprietary technical documents, standards are widely available to teachers, so I conclude with a discussion section that includes resources technical communication instructors could use to further develop pedagogical approaches to the study of standards.

UNDERSTANDING STANDARDS

The most straightforward but necessary point to make about standards is that they are important. As sociologist Lawrence Busch (2011) argued, they "are about the ways in which we order ourselves, other people, things, processes, numbers, and even language itself" (p. 3). They remain mostly out of view, but they become the discursive scaffolding that separates in-groups (those that conform to widespread standards) from out-groups (those people and things that do not follow standardization) (Bowker & Star, 1999). An object's ability to conform to a technical standard is a test to "determine what shall count. Those people and things that pass the tests or make the grade are drawn into various networks" (Busch, 2011, p. 12). The object either conforms to the written language of the standard or it cannot enter the networks of standardized objects moving through the world.

Technical standards also include some combination of various elements, including *standard specifications, standard test methods*, and *standard definitions.* Those areas are covered by the definition of technical standards used by the U.S. government:

- "Common and repeated use of rules, conditions, guidelines or characteristics for products or related processes and production methods, and related management systems practices.
- The definition of terms; classification of components; delineation of procedures; specification of dimensions, materials, performance, designs, or operations; measurement of quality and quantity in describing materials, processes, products, systems, services, or practices; test methods and sampling procedures; or

descriptions of fit and measurements of size or strength" (OMB Circular No. A-119, 2016, p. 5). That definition shows the varied nature of technical standards and also how they fit within technical communication more broadly. A typical standard might include sections focusing on technical definitions, instructional material, and test procedures for evaluating a product or practice. Much of the content involves translating complex material from the standards-setting bodies to diverse audiences interested in implementing the standard. And, importantly, standards are often fairly technical documents that, according to the German Institute for Standardization, "are not written for the general reader – anyone using standards should have enough technical knowledge that they can take reasonable responsibility for their actions" (Schmidt, 2018, n.p.).

Standards also serve a rather unique place in the various technical documents engineers must interact with because standards are different from legal regulations. There are various laws that determine forms an object must take. For example, California has emissions regulations vehicles must meet to be legally operable in the state. Most countries have safety regulations for objects; for example, cars must meet certain safety minimums to be sold in the European Union. As far as digital media goes, the General Data Protection Regulation (GDPR) in Europe dictates what information companies can and cannot collect about individuals, so, in a sense, the regulation shapes the structure of information collection. However, as AEM Senior Director Michael Pankonin (2016) points out, despite much confusion, legal regulations are not the same as standards. Laws and regulations do partially shape how objects work, but they do so in different ways from technical standards.

Unlike laws and regulations, standards are not legally binding. The ISO, for example, has thousands of standards companies are encouraged to follow, but companies do not have to follow them. The same is true for almost all standards-setting bodies. GS1 dictates standard data formats for barcodes and Radio Frequency Identification (RFID) tags, but other companies are free to not participate and design their own data format (UPS is one company that does so). The World Wide Web Consortium (W3C) sets accessibility standards for Web pages, but companies do not face legal consequences if they do not conform to

the W3C. These standards are not completely separate from law because, as the former secretary general of the United Nations Kofi Annan argued, many lawmakers do consult standards when determining new laws (Bird, 2004). But, regardless, standards serve a different rhetorical function from law and regulation, and as the German Institute for Standardisation explains, "Unlike laws, standards are not legally binding. Their use only becomes binding when this is stipulated in legislation or in a contract" (Schmidt, 2018).

So if standards are not legally binding, what do they do as technical documents? The answer is that they serve a variety of functions.

- They can improve consumer confidence because consumers can be fairly sure that products that followed agreed-upon standards are "are safe, reliable and of good quality" (ISO, 2018, n.p.).
- They can protect manufacturers from legal liability. German law, for example, dictates that "courts can use standards to determine whether a product is faulty and if the manufacturer is liable for damages" (Schmidt, 2018, para 2). Manufacturers that can prove they followed established standards will likely not be found liable for damages.
- They can help new technologies thrive. For example, a study of RFID adoption in retail found that the creation of an industry-wide tagging data standard increased adoption (Beck, 2018). Because of the standard, companies could more easily adopt RFID because they knew tags from different manufacturers would be interoperable.
- They are infrastructures that make other infrastructures possible (Frith, 2019). For example, the Internet would not work without a variety of technical standards that determine how modems connect, the IP addresses assigned to objects, and so on. If each manufacturer used a different process, adoption would be much slower.

Because of their importance, this article argues that technical standards are both an important form of technical communication and that they can be valuable teaching tools in the technical communication classroom. Consequently, even for students who have no intention of going into standards-writing, these documents can provide opportunities to work with technical documents and become familiar with a genre they will likely have to deal with in the workplace. In addition, technical standards are real-world documents available to instructors, and the discussion section of this article provides a list of resources instructors can use to find available standards. Finally, for technical communication classes populated primarily by engineers, technical standard documents can familiarize students with the importance of how technical writing shapes the projects engineers work on in professional settings.

ACADEMIC TECHNICAL COMMUNICATION RESEARCH AND STANDARDS

To find technical communication research on technical standards, I searched for the term "technical standards" and then just "standards" in the five major technical communication journal identified by Lam and Boettger (2017): *Technical Communication, Journal of Business & Technical Communication, IEEE Transactions of Professional Communication, Technical Communication Quarterly,* and *Journal of Technical Writing and Communication.* I did not set a date range for the search because standards are not an emerging type of document; that is, research from the 1980s or 1990s would still be relevant to this study. The term "standards" returned some unrelated results, such as articles about white papers and articles about establishing guidelines for client work in the classroom. Consequently, I read through the returned articles to identify their relevance to research on technical standards.

The first point to make is that not much research has been published related to technical standards in technical communication journals. In addition, as far as my searches showed, little to no technical communication research has either treated technical standards as texts worth analyzing or technical standards as texts with pedagogical potential. The bulk of research that addresses technical standards in any detail focuses more on how they impact technical communication than the role technical communication plays in shaping them as texts. For example, Hackos published articles about how to develop technical editing standards (Hackos, 1985), how ISO standards can impact project management (Hackos, 2018), and why organizations need to implement standards, writing that "standards help the community demonstrate that it has people working together worldwide to ensure that it defines and implements best practices in designing content and delivering it effectively" (Hackos, 2016, p. 24).

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Relatedly, Batova and Andersen (2017) argued that content management professionals need to be familiar with industry standards.

A few research studies in technical communication journals did treat standards somewhat as an object of study. Haas and Witte (2001) performed ethnographic work to examine how engineers collaborate to write technical standards and focused on the embodied nature of writing. Their work with engineers showed that "the standards document, then, is meant to codify expert knowledge (much of it, as we illustrate, embodied knowledge), streamline decision making, and standardize the material reality of city infrastructure" (p. 419). Interestingly, while their work was published in the *Journal of Business & Technical Communication* and examined clear practices of technical communication, technical communicators were not the ones working on the standard. Instead, the process involved engineers and city planners.

The one study I could find in the five technical communication journals that discussed using standards in the classroom was Youngblood's (2012) examination of how to teach accessibility standards in Web design classes. Her work used standards as part of a pedagogical approach, but, in that case, the goal was to familiarize Web development students with the importance of accessibility standards. Consequently, this research study fills gaps in the literature in multiple ways. For one, it is one of the only technical communication studies to treat standards as technical texts worth empirically analyzing. Most importantly, this study uses that analysis to make the case for why technical standards should be used in the technical communication classroom. In particular, no studies have examined standards as texts that could be improved and analyzed as part of the process of teaching technical communication students (and practitioners interested in standards writing) how to deal with real-world technical material.

METHODS

The data for this study came from the Tag Data Standard (TDS) that governs deployment of the Electronic Product Code (EPC). The EPC is the data format used on RFID tags to identify items in the supply chain and is one of the major standards that has influenced the development of the Internet of Things (Ashton, 2009). The EPC works as an updated version of existing barcode data standards, and, because of the higher data capacity, the EPC has vastly expanded identification capabilities, with 2,541,865,828,329 possible numbering options. The document is published and maintained by GS1, which is a major standards-setting bodies that "enable organisations to identify, capture and share information smoothly, creating a common language that underpins systems and processes all over the world" (GS1, 2018, n.p.). The TDS is one of the most important documents published by GS1.

The TDS was chosen for this study because it is an important technical standard in business and logistics, is freely available, and is comprehensive enough to render a rich dataset. The technical standard is 126 pages with an extra 74 pages of appendices. The appendices were not included in this data analysis because they are not the body of the document. The version of the TDS analyzed for this study is 1.9, and since the larger research project began, the GS1 has published two more recent versions (the current version is 1.11). The changes are minor and affect only small parts of the document.

This study used a grounded theory approach to analyze the TDS as data. Grounded theory is an inductive method, and I used grounded theory because I wanted to approach the data with minimal theoretical preconceptions (Charmaz, 2006; Glaser & Strauss, 1967). Consequently, I began the study with a broad research question that guided my analysis: "How could this comprehensive standard be improved by trained technical communicators?" To answer that research question, I began by performing open coding to broadly identify areas of interest within the TDS. I used NVivo software to perform the coding. I then proceeded through seven full iterations of coding all the data to hone down the number of categories and identify relationships between types of content. The coding process also involved an extensive memoing process that described each category in full and explained linkages among categories.

Once I was comfortable with the categories I had identified in the data, I then met with a second coder to train her with the coding. She then coded the dataset independently and we came to an agreement on reoccurring issues that arose within the text of the TDS. Throughout the coding process, my second coder and I were guided by the overarching research

question and coded the data to identify categories of content in which the standard could be improved through best practices of technical communication. The end goal was twofold: to examine roles technical communicators can play in improving technical standards and to show how established standards can work as real-world teaching documents that can be improved through classroom projects.

To fit with the tenets of grounded theory, I provide textual evidence of each category below. However, before moving on to the data analysis, I want to stress one main point: My second coder and I did not analyze the TDS as a critique of the document. The TDS is comprehensive, mostly well-constructed, and deals with technical material across a range of industries. The TDS also follows certain genre constraints, such as the use of passive voice, that might be in conflict with some technical communication practices, so I do not include categories that may conflict with genre expectations of technical standards. Rather, the focus was on identifying areas that could be improved by trained technical communicators with a specific focus on using technical standards as pedagogical tools. After detailing the data analysis, I return to the focus on pedagogy in the discussion and include resources instructors can use to find standards tools.

DATA ANALYSIS

The categories below identify reoccurring issues I identified in the TDS that corresponded to the guiding research question. To provide examples and fit with the tenets of grounded theory (Charmaz, 2006), the data analysis relies on researcher description as well as actual text from the document. The descriptions also explain how frequently such instances arose in the data and if the occurrences were spread throughout the document or contained in individual sections.

Inconsistencies with Authorship
Version 1.9 of the TDS does not identify any authors, though an earlier version (Version 1.1) identified the "Tag Data Standard Working Group" as the document's author (GS1, 2005). The title pages of the more recent version only lists GS1, which is the organization responsible for publishing the standard. Consequently, based only on the textual data, there is no way to definitively determine the authorship of the

document. However, the analysis revealed an ongoing issue throughout the 18 sections of the document: inconsistency that suggests multiple authors who did not harmonize one voice for the TDS.

One example came in language used to identify particularly important pieces of text. As a comprehensive guide to EPC deployment, some pieces of the standard were likely more crucial to readers than other pieces. To get readers' attention, the TDS used a variety of linguistic markers, but the markers were inconsistent across sections. For example, a few of the common constructions were:
- "Note that" (coded in sections 5 and 6)
- "It should always be remembered" (coded in sections 3 and 4)
- "It should be recognized" (coded in sections 10 and 11)
- "It is essential to understand" (coded in sections 11 and 12)

As the list above makes clear, the language used to identify important pieces of the text was inconsistent across sections. The TDS did not have any linguistic markers used across more than 2 sections to help the reader identify key passages of text. Consequently, the lack of consistency could lead to confusion for readers who rely on linguistic markers to recognize key passages.

Another example of inconsistency came in the form instructions took in the TDS. Much of the TDS focused on instruction, and one of the document's main purposes is to instruct readers how to implement EPCs across various industries. The front matter of the document included definitions of how words such as SHOULD, SHALL, MAY, and so on should be interpreted within instructional content. However, while the front matter defined how these terms should be understood (at least when they are in all capital letters), the actual format instructional content took faced similar issues as the signaling language. As an example, sections 11, 15, and 16 clearly marked most instructional content with the word "Procedure:" followed by a list of numbered steps. None of the other 15 sections used that construction to denote instructional content: Section 19 shifted to bulleted rather than numbered lists, section 3 included all instruction in paragraph form, and section 8 included numbered lists but did not mark them with "Procedure:".

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The following three blocks of text contain three common presentations of instruction in the TDS. The constructions have little similarity, with one being numbered, one being bulleted, and one being in paragraph form.

Procedure:

1. Starting with the EPC Pure Identity URI, replace the prefix urn:epc:id: with urn:epc:tag:.
2. Replace the EPC scheme name with the selected EPC binary coding scheme name. For example, replace sgtin with sgtin-96 or sgtin-198.
3. If the selected binary coding scheme includes a filter value, insert the filter value as a single decimal digit following the rightmost colon (":") character of the URI, followed by a dot (".") character.
4. If the attribute bits are non-zero, construct a string [att=xNN], where NN is the value of the attribute bits as a 2-digit hexadecimal numeral.
5. If the user memory indicator is non-zero, construct a string [umi=1].
6. If Step 4 or Step 5 yielded a non-empty string, insert those strings following the rightmost colon (":") character of the URI, followed by an additional colon character.
7. The resulting string is the EPC Tag URI.

Output: Translate each 7-bit segment, up to but not including the first all-zero segment (if any), into a single character or 3-charcter escape triplet by looking up the 7-bit segment in Table A-1, and using the value found in the "URI Form" column. Concatenate the characters and/or 3-character triplets in the order corresponding to the input bit string. The resulting character string is the output. This character string matches the GS3A3 production of the grammar in Section 5.

Construct the output bit string by concatenating the following three components:

- The value P specified in the "partition value" column of the matching partition table row, as a 3bit binary integer.
- The value of C considered as a decimal integer, converted to an M-bit binary integer, where M is the number of bits specified in the "GS1 Company Prefix bits" column of the matching partition table row.
- The value of D considered as a decimal integer, converted to an N-bit binary integer, where N is the number of bits specified in the "other field bits" column of the matching partition table row. If D is the empty string, the value of the N-bit integer is zero.

The inconsistencies in method of instructional delivery were found throughout the document. One possible explanation may be the nature of the standard as a constantly evolving text. The original TDS specification published in 2005 contained 11 fewer sections in the body of the document and was 52 pages shorter with 8 fewer appendices. Different sections were added over time through the iterations of the document, which might explain some of the inconsistency found amongst the sections.

The issues with consistency are more than a simple copyediting fix. Lack of consistency can make it difficult for readers using the document to know when pieces of text are marked as important or even when pieces of text have transitioned from description to instruction. The focus on inconsistencies across sections provides students with the opportunity to better understand how living technical documents change through multiple iterations. The ability to identify the types of inconsistencies that often occur as multiple parties involved in document creation also enables opportunities to teach students about harmonizing voices in multi-author documents and have them identify areas of improvement through techniques such as structured authoring.

Lack of Audience Identification

The TDS has a clear yet varied audience. The front matter of the document includes the following section that defines that audience:

Audience for this document
The target audience for this specification includes:
- EPC Middleware vendors
- RFID Tag users and encoders
- Reader vendors
- Application developers
- System integrators

The explicit identification of audience in the front-matter, however, is the last time the word "audience" appears in the text. The issue with the document's

lack of later mentions of audience is that each of those bullets has potentially different interests. The TDS is a comprehensive document devoted to:

- The specification of the Electronic Product Code, including its representation at various levels of the EPCglobal Architecture and its correspondence to GS1 keys and other existing codes.
- The specification of data that is carried on Gen 2 RFID tags, including the EPC, "user memory" data, control information, and tag manufacture information.

Consequently, not all parts of the TDS are relevant to the different audiences. For example, reader vendors design and market RFID readers and are likely not as interested in how data in integrated onto RFID tags. The RFID encoders, on the other hand, may be primarily interested in the different data structures. Breaking audiences down even further, the TDS includes highly specific sections on RFID deployment. For example, entire sections are devoted to encoding tags with data used by the U.S. Department of Defense. Other sections focus on publishers using ISBNs alongside EPCs. It is likely that no individual reader would be interested in using the entirety of the document.

The varied audience identified in the document and the comprehensiveness of the TDS suggest that a more extensive discussion of audience could help readers know which sections are applicable. But the document, as mentioned above, does not explicitly mention audience outside the front matter. In addition, many of the listed audiences in the front matter are never mentioned again. For example, there is no other mention of "reader vendors" or "application developers" in the 126 pages of text. Consequently, the TDS could benefit from a more fine-grained understanding of audience that includes information in each section about to whom the text is targeted. In its current form, readers are not given any guidance about which sections of the document are intended for the five different audiences identified in the front matter.

The issues of audience provide another opportunity for students working on suggesting comprehensive edits for the TDS. Audience analysis is a basic principle for technical communication, and students are often taught how to make audiences explicit within technical texts. As comprehensive, multi-section documents, standards provide an opportunity to have students identify

primary and secondary audiences and make suggestions about how to incorporate that information into the text. The experience can also prepare students to work with standards in the workplace and understand that many comprehensive standards may only have small sections that are applicable to technical communicators.

Design Emphases and References

The TDS is a fairly consistently designed document. The sections and subsections are labeled with numbered headings. The tables and figures are numbered as well. The font choices remain consistent throughout. The layout is clear throughout the document.

Although the more major design elements of the TDS are all fine, the document uses few smaller design elements to guide the reader. There are no design emphases for important pieces of content and no subheadings used to identify audiences for specific sections. The only alteration in text comes in the different font used to differentiate data strings from the rest of the text. Outside of headings and a different font for data, the document does nothing to identify specific pieces of text.

Another issue is with appendices. The TDS has 14 appendices (A–N), but the body text only references five of the appendices (D, G, I, L, and M). The consequences of the lack of textual reference can be seen when looking at Appendix B: the Glossary. The glossary contains detailed definitions of 29 terms. Nothing outside the table of contents, however, alerts the reader to the existence of the glossary. The appendix is never mentioned and little is done in design terms to denote the term as something included in the glossary.

The focus on the critical yet subtle types of textual design important to technical communication offers another potential pedagogical opportunity. Students can work with these documents to suggest best design practices (e.g., emphasizing important pieces of text or terms in a glossary) for a professionally produced, real-world textual document. They can gain experience working with technical material that they might not fully understand but will still be able to engage with enough to apply the terms and theories they learn in the technical communication classroom.

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DISCUSSION

The primary goal of this article is to focus on technical standards both as examples of technical communication and texts that have pedagogical potential. As this article has argued, standards are an important example of technical communication. They translate technical material from larger bodies to individual readers; they can be comprehensive documents that go through multiple iterations and involve multiple authors; they can target multiple audiences; and they involve detailed instructional content. They are important texts that can showcase the role technical writing plays as a discursive infrastructure that supports and shapes various higher-level practices.

As the data analysis showed, standards are also consequential, professionally produced texts that can be tools to let students work with and edit real-world technical material. The TDS that was the data source for this article is comprehensive and important for RFID adoption. However, the 126-page text also works as an example of the struggles organizations face when documents go through multiple iterations and when they do not necessarily rely on trained technical communicators to make texts more usable. The data analysis covered areas in which the TDS may be improved, but the primary purpose was not a critique of a single text. Rather, the purpose was to showcase the pedagogical potential of using technical standards in the technical communication classroom. As the data showed, students could use these texts to learn more about how technical standards shape practices while also using comprehensive editing and design skills to make suggestions (or follow through with changes) about issues of consistency, design, and textual markers. Unlike many proprietary technical documents or outward-facing documents that focus more on marketing content than technical content, technical standards provide an opportunity to give students to work with, understand, and potentially revise valuable, public-facing technical documentation.

The data presented here suggest pedagogical methods that could be used to introduce students to standards. While the data analysis focused on one specific standard and I make no claims to broader generalizability, students could analyze different standards to identify similar issues. For example, technical editing assignments could have students work with different standards to identify the categories discussed above. The assignment might take a multi-section standard and have students analyze issues of authorial inconsistency found across the documents. The ability to identify inconsistencies across sections would enable students to move to a more comprehensive form of editing that moves past grammar to look for more fundamental-style questions that may inhibit readability.

The editing could also help students understand how inconsistencies can make instructional material less clear. As identified above, a standard like the TDS includes multiple formats for instructional content, which can make it difficult for the reader. Students could work with a standard to improve inconsistencies, identify different formats for instructions, identify audiences, and make design suggestions. For example, as the data analysis showed, the design of the TDS was fine, but the text lacked design elements such as contrast and emphasis that could help aid the reader. Students familiar with basic technical communication theory could apply that theory to standards as a way to work with and make suggestions about real-world text. The comprehensive editing work could then result in a suggestions report on how the standard under study could be improved as well as a comprehensive style guide for future documents. The project would then serve three purposes: 1) It would help students understand the role technical writing plays in shaping how objects are built and practices are designed, 2) Students would be able to work with and comprehensively edit large, real-world, technical documents, and 3) Students would become more familiar with the genre of standards and be better prepared to work with standards as they enter the workforce.

One of the most valuable pieces of positioning technical standards as texts with pedagogical potential is their availability. Not all standards are freely available, though some are and others are available through university subscription. Consequently, to help further the argument that technical standards should be taught in the technical communication classroom, the list below covers where to find standards and whether subscriptions are required. This list is intended to help technical communication instructors and practitioners interested in developing standards expertise, and, while it is not comprehensive, it provides ample resources.

- **GS1:** GS1 is an international organization that produces standards about business communication and identification. It is responsible for various standards related to barcodes and RFID technology. The organization's recently published standards are freely available and can be found here: https://www.gs1.org/standards/log
- **International Organization for Standardization (ISO):** The ISO is an international organization that includes members from various standards-setting organizations. It is one of the most powerful standards-setting bodies and has published 22,432 international standards as of December 2018. The ISO website also has extensive information about the standards development process. The ISO charges for access to its standards, but it does have freely available standards on its "Popular Standards" page: https://www.iso.org/popular-standards.html
- **International Telecommunication Union (ITU):** The ITU is a UN agency responsible in part for global telecommunication standards. The ITU website includes various free standards recommendations governing everything from allocation of the radio spectrum to standards about video calling. The freely available standards can be found here: https://www.itu.int/itu-t/recommendations/index.aspx
- **ASTM International:** ASTM has published more than 12,000 technical standards covering industries such as oil & gas, aerospace, and agriculture. ASTM does charge for access to its published standards, but some universities have access to all of the standards through the library electronic databases. **https://www.astm.org/**
- **Society for Standards Professionals (SES):** The SES does not publish its own standards, but the website is a valuable resource for people interested in pursuing standards-writing as a career. The website includes lists of international standards-setting bodies and a certification program students and technical communication practitioners could pursue to learn more about the standards process. https://www.ses-standards.org/

The five sources above are not meant to be a comprehensive account of standards-setting bodies. They all offer resources instructors can use to teach students about standards as a form of technical communication. Some of those resources (e.g., ISO and ITU) also walk people through the standards-setting process, so students can be introduced to how writing by committee works in practice. The freely available technical documents on each of those sites provides pedagogical opportunities to let students work with real-world texts, and the experience they gain would be relevant whether they pursued a career in standards-writing or another technical communication field.

LIMITATIONS AND FUTURE RESEARCH

I did an in-depth analysis of one long standard rather than a more cursory analysis of multiple standards. Consequently, the results reported upon are not generalizable. I make no claims that all standards face similar issues, though the TDS is published by one of the major business standards organizations; it is not just a random standard chosen as an object of study. Future research studies can examine other major standards to establish if there are consistent issues that can be improved. The diversity of available standards also adds to their pedagogical value. Students could compare standards from different organizations to note similarities and differences within the broader genre.

Ultimately, treating standards as technical communication opens up a potentially rich vein of future research opportunities. Technical communication researchers can focus on establishing the genre elements of standards, establishing consistent guidelines and best practices, and working with users to improve the standards process. Researchers also could do workplace research with practitioners to examine how standards shape the work of technical communicators. The pedagogical opportunities are possibly more pronounced. Thousands of publicly available standards exist that can be used to teach students about an important genre of technical communication. Even if the students do not pursue careers in standards writing, standards are a diverse enough genre to include various elements of technical communication, including definition, documentation, and test procedures that would be valuable in the classroom.

CONCLUSION

Standards are important. They are the discursive infrastructure upon which much of our world is built. Looking up information online involves engaging, often

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unknowingly, with standards that govern everything from identification practices to the size of cables running through the ground. Driving to work involves confronting multiple standards that shape everything from the design of stop signs to the ISO 26262 standard that governs automobile safety. Standards are everywhere, and somewhere there are written documents that undergird many of our interactions with the material world.

Standards are also prime examples of technical communication. They can work as extended procedural documents designed to bring consistency to the shaping of material things. As examples of technical communication, these standards have pedagogical value in the technical communication classroom. They are technical documents used across various industries, and, most practically, they are available to instructors who want to find technical texts to show students how written language shapes the world.

I want to conclude here by reiterating a few main points about standards that can showcase their pedagogical value. First, they are technical documents that have varied audiences but expect a moderate level of technical literacy. Second, they are not legally binding but shape objects and practices because they are adopted willingly and should be accessible to spur adoption. Third, they are often comprehensive and can range from a few pages to well over 100 pages. Fourth, many standards are freely available. And, finally, standards are found in almost any industry. Consequently, standards have significant pedagogical potential for the technical communication classroom. Students can analyze and comprehensively edit standards from relevant industries and gain experience working with real-world technical texts. As an additional benefit, students will also become more familiar with a genre they will likely engage with in their jobs. These standards are exactly the type of oft-ignored but nonetheless crucial forms of work that have shaped our profession and discipline. They are technical communication.

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Recursive Participatory Mentoring: A New Model for Mentoring Women in the Technical Communication Workplace

By Lisa Melonçon and Liza Potts

ABSTRACT

Purpose: Few organizations would question the importance of mentoring, yet mentoring is an under-researched aspect of technical communication. In fact, the vast amount of research across disciplines points to the need for new models for mentoring, particularly for women. This article offers a new mentoring model.

Method: A comprehensive review of the literature with a workplace case study provides a foundation for a new mentoring model in technical communication, addressing the limitations of current models.

Results: The literature review exposes weaknesses in current models for mentoring women. The recursive participatory mentoring (RPM) model developed in an academic setting shows potential for addressing these weaknesses, as shown through a workplace case study.

Conclusion: Technical communication needs new and innovative mentoring models to address the needs of women in the workplace. The recursive participatory mentoring model we describe provides the flexibility to be implemented in diverse workplaces and professional organizations. The model has shown initial success in providing women access to sustainable mentoring through their careers.

Keywords: mentoring, women in the workplace, user experience

Practitioner's Takeaway:

- Provides organizations a new mentoring model, particularly suited to the needs of women in the workplace.
- Shifts mentoring from one based on hierarchies to one based on the experiences of the participants.

- Gives practical insights into how to implement a new mentoring model in the workplace.

"So why aren't there more female leaders among us? This is the question that is particularly relevant for male-dominated industries like technology, but applicable everywhere else. I believe that one of the answers lie [*sic*] in the lack of mentorship, in the lack of both mentors and mentees."

Walter (2012)

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Mentoring programs have long been a staple of a workplace's culture because they provide employees a way to develop and to hone a variety of professional skills, while simultaneously creating a connection with the company. The goal of mentoring is to better balance stated values, commitments, and ideals in the lived experiences of employees, both professionally and personally. Because many definitions of mentoring exist, we take mentoring to mean a relationship (or set of relationships) that provides insights and experiences around informal and formal rules of organizations and industries and can help mentees to develop confidence, insight, and problem-solving skills to advance in their careers while providing the mentors and organizations insights into organizational culture. Mentoring relationships provide a vast array of support around issues such as navigating organizational politics, offering a different perspective, brainstorming problem-solving strategies, providing emotional support, giving feedback on particular issues, and focusing on professional development issues.

Here, we limit our focus specifically to mentoring for women, who make up 47% of the U.S. workforce (U.S. Dept of Labor, 2017). Absolutely, issues of mentoring affect all employees, and men can and should play a vital role in mentoring. However, the issues that women face in the workplace are different and, in one of the few surveys of women professionals, completed by LinkedIn, Williams (2011) reported 82% of women believed in the importance of mentoring, yet, there is still "a large chasm [continues] between the number of women starting out on the professional track and how many [*sic*] advancing to senior positions" (Warrell, 2017, n.p.). This lack of advancement to the corporate suite is likely due in part to the fact that only 54% of women "have access to senior leaders as mentors" (EgonZehnder, 2017, p. 5). According to trade publications, the number of women working in technology companies is around 30%, but when those numbers are parsed to look at women in leadership positions, the percentage falls to 22.5%, which means women are not in positions to influence their companies' strategic directions (Cheng, 2015). These numbers suggest that women; particularly in science, technology, and medical fields; have unique workplace needs that require a different type of mentoring model than is currently available in an effort to increase both mentors and mentees.

In what follows, we review the existing literature on mentoring and provide a synthesis and critique of existing mentoring models. The next section introduces a recursive participatory mentoring (RPM) model that addresses many concerns with and limitations of existing models. Then, we illustrate the potential of this model through a case study. Finally, we provide guidance on how to implement the RPM model. RPM as a mentoring model expands current research on mentoring, builds knowledge between research and practice, and offers ways to mentor women.

RESEARCH ON MENTORING

The existing literature on mentoring is vast, but in our review of that research, we determined that a large portion applies to higher education settings, which makes it not easily transferable to other locations because of the unique characteristics of academic jobs and, thus, it does not support the premise of this paper (see, e.g., Buzzanell et al., 2015; Cole & Hassell, 2017; Montgomery, 2017).

Focusing more specifically on technical and professional communication (TPC), we could locate only three directly relevant studies that examined mentoring in technical and professional communication. In one study, Keller (2015) examined the mentoring practices of eight executive-level employees at a Midwest medical manufacturing company, and Zimmerman and Paul (2007) asked teachers of technical communication what problems they experienced when mentoring students. Zimmerman and Paul's study concluded that the model of mentor and protégé was not an effective one. The most relevant scholarly inquiry into mentoring models for women and in TPC is Sullivan et al. (2015), who describe a participatory mentoring model in higher education that holds potential for workplace settings (discussed in more detail below).

Outside of TPC, recent research on workplace research (Allen et al., 2009; Doughtery et al., 2007; Ghosh & Reio, 2013; Helms et al., 2016; Scandura & Pellegrini, 2007) is limited to traditional models of mentor and protégé, whereas much of the academic research only offers "evidence-based" approaches without examples of successful models, nor does it focus particularly on women.

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Trade publications routinely publish pieces on the importance of mentoring and creating workplace mentoring programs (e.g., Bond et al., 2017; Martinelli, 2016; Warrell, 2017), and that need is even more important in technology and technology-related companies. Bateman (2017) relays three stories of why mentoring matters in "tech," with one mentee pointing out how her mentor has "been life changing," which is echoed by other trade stories about the need for women to be mentored in the technology sector (Martin, 2012; Schwartz, 2015). In particular, one of these publications notes that "this groundswell of attention can be traced to the practical application of mentoring in organizational settings, as well as to the general appeal of mentoring as a personal, tangible, and

transformational relationship" (Ragins & Kram, 2007, p. 4). The general appeal of mentoring, however, needs to be understood in light of the types of mentoring models that exist.

Since the literature on mentoring is vast, we narrowed our approach to determine the different types of models currently being used and researched. We wanted to better understand these models specifically in terms of their benefits and limitations to mentees, mentors, and organizations. Table 1 outlines the different types of mentoring models.

Other than the limitations or challenges mentioned in Table 1, all the current models also suffer from several general problems that impede the opportunities for developing successful mentoring relationships:

Table 1. Benefits and challenges of existing mentoring models (modified from Sullivan et al., 2015, n.p.)

Existing Models	Benefits	Limitations
Traditional 1 on 1 (often thought of as mentee and protégé)	• one on one relationship that can provide rich mentoring opportunities • mentor usually well-established so advice can be trusted	• requires connections on both sides • lack enough mentors • power structures in play means protégé may not feel comfortable asking hard questions
Some to some or some to many	• orient in many areas • often focused on specific tasks or problems	• lacks depth to strengthen skills and knowledge • very hierarchical & structured, which threatens sustainability
Co- or Peer-Mentoring	• inclusiveness, interdependence, & friendships • flexibility in issues • shared knowledge • often provides a safe place/space	• takes time/effort and not as certain will work • can receive bad advice that is masked • lacks genuine commitment (jealousy over uneven success, inconsistent participation, &/or conviction that peers are not helping you as much as you help them)
e-Mentoring	• ease & flexibility of use, particularly across organizations or physical spaces • repeatable • knowledge can be stored	• requires comfort with tools and technology • lack of personal connection • possible miscommunication
Networked	• strong relational ties among participants • opportunities to use varied styles of interaction • diffuse power of mentor • can be channel- or occupation-specific	• lack ties or deep relationships • can make mentoring more mechanical or robotic • potential for poor mentoring • difficult to find the best network

- They maintain hierarchical structures that do not allow true relationships to form.
- They do not account for different kinds of knowledge necessary to succeed and thereby do not encourage a series of mentoring relationships to address different concerns.
- They are difficult to sustain over a period of time, particularly as the employee grows and matures, and needs additional types and kinds of mentoring.

Thus, new mentoring models are necessary. In the next section, we introduce a recursive participatory model (RPM) that addresses the concerns and limitations of the existing models and directly addresses the three general issues mentioned above.

RECURSIVE PARTICIPATORY MENTORING MODEL (RPM)

Started in 2013 and developed to address the needs of women faculty in technical communication in higher education, Women in Technical Communication (womenintechcomm.org) is a nationally and internationally recognized academic organization. It provides women a safe space to discuss issues particular to their careers. (See the commentary, Simmons et al., 2015, for more information on the history of this organization.)

The foundational approach to Women in Technical Communication was to develop a mentoring model that valued "experiences over expertise, listening over directing, and relationships over rigidly institutionally sponsored program structures" (Moore et al., 2017, p. 231). In addition, the Women in Technical Communication model was based "on the feminist co-mentoring model that flattens hierarchies and redistributes power more widely and we draw on affective theories, that sidestep a kind of rationality that privileges traditional criteria (and that usually privileges men)" (Moore et al., 2017, p. 239). This feminist orientation to building the model allows it to focus on the dual goals of helping mentees achieve their career goals while also providing immediate help for problems, questions, and concerns that erupt in the day-to-day lives of participants. The feminist orientation also allows the model to work toward a work-life balance that is often missing in discussions on mentoring and career opportunities.

The model developed by Women in Technical Communication for higher education address many of the concerns and limitations of existing models and focused on ways to offset those concerns. To offset some of the challenges discussed in the previous section, the RPM model has two specific foci: (1) to acknowledge that the challenges women face are often unique from those faced by men and (2) to provide a safe space for women to discuss their concerns about their careers. Specifically, Women in Technical Communication considered how to integrate the experiences and expertise of both mentor and mentee because all experiences and expertise are valuable. The original model used in academic settings had four dimensions—people, places, resources, and affect (Sullivan et al., 2015).

Using past experiences as technical communicators, the authors have modified the original Women in Technical Communication mentoring model to ensure its applicability to diverse workplaces and professional organizations outside of higher education. RPM includes two new dimensions—domains and experiences—to ensure that the model can be used in workplace settings. These additions came from our own experiences in the workplace. Rather than older approaches that focus mentoring on certain variables or criterion, such as career outcomes (Lankau & Scandura, 2002; Scandura & Schriesheim, 1994), stress (Kram & Hall, 1991; Nielson et al., 2001), or specific benefits to the organization (see e.g., Clutterback, 2004; Dickinson et al., 2009), RPM is designed to address the whole woman and her perspective of how her career is progressing, which is another unique aspect to this model.

To achieve an emphasis on the whole person requires an ongoing recursive, reflexive process that involves active participants. The key terms—*recursive* and *participatory*—are important enough to warrant a brief explanation. The emphasis on recursivity highlights the model's necessity to be continually evaluated by asking participants for feedback, reflecting on the positive and negative events that have come from the model, and altering and updating ways of encouraging participation. *Recursivity*, by its nature, encourages repetition and reflection and that means that activities need to be repeated to hone their effectiveness, as well as to determine what works and what does not. The self-reflective nature of *recursivity* remains important for all participants in the model

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because it allows space for consideration of what might be needed at different times in a woman's career.

Participatory invokes the idea of active engagement. Current mentoring models often require different levels of engagement that range from assigned mentors and either dictate meeting every few months or are completely voluntary. Because RPM advocates for engagement by those who want to actively participate, it encourages organizations to work with participants to build infrastructures that are more sustainable and open to different kinds of experiences and expertise. The main goal of *participatory* is to eliminate (or to minimize) the hierarchical nature of existing models, while also encouraging the type of grassroots participation that ensures the viability of the model. *Participatory* also allows for different types of engagement (based on place, career, needs, or knowledge), as well as different lengths of participation (one-time meetings, consistent involvement, intense one-on-one help for a short period of time, etc.). The structure, however, is participatory and contingent on the situation rather than on the ways existing models provide a structure that mentoring must fit into.

By calling the model recursive and participatory, we hope to bring to the forefront the holistic nature of the approach where both mentors and mentees are finding value. This model is not focused on fixing or improving the individual; rather, its focus is on creating structures/infrastructures that promote continued success, no matter the level of "success" the individual needs. This approach can support women and help them create balanced lives and achieve the type and kind of success they would like to achieve based on individual needs and experiences. In the next section, we describe RPM's six dimensions.

SIX DIMENSIONS OF THE RECURSIVE PARTICIPATORY MENTORING MODEL

RPM addresses six important dimensions of mentoring: people, places, resources, affect, domains, and experiences. Each of these dimensions overlap with one another and, at any given moment, one dimension may need more attention than others. The benefit of the model is in its flexibility driven by the participants. See Figure 1.
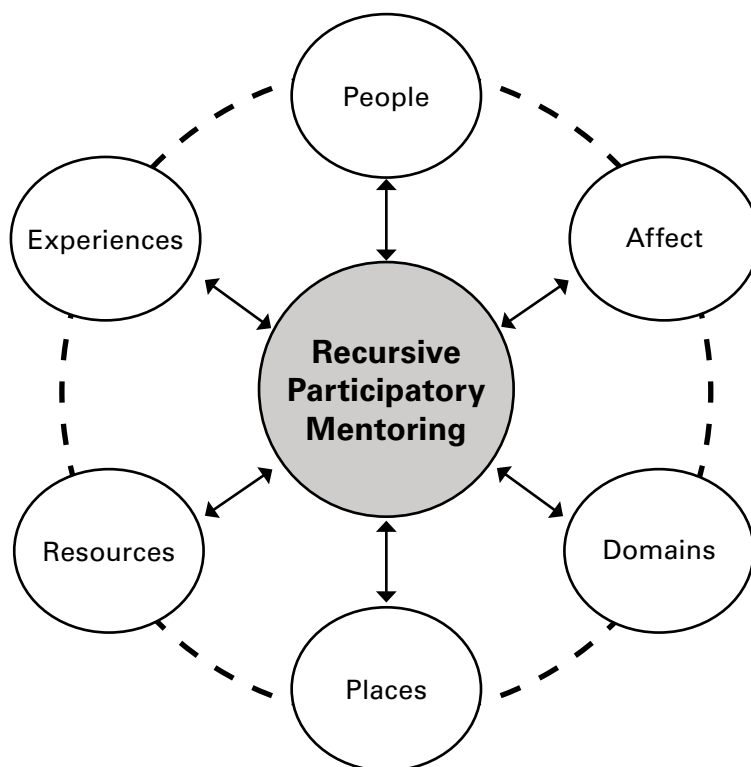

Figure 1. Recursive participatory mentoring model with six dimensions

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It is important to note three specifics about the overall model. First, this model "would not be successful without these dimensions because the model emphasizes the situational nature of mentoring" (Sullivan et al., 2015, n.p.), and the dimensions, while discussed separately, often overlap and, in many ways, depend on one another. Second, the dotted line represents the recursive nature of the model, its openness, and flexibility. The decision not to close the outer circle with a continuous line represents the opportunity for the dimensions and the overall model to be used as needed, as well as being able to move between and within each of the dimensions. Finally, even though we have touted the flexibility of the model and the way it mitigates problems with existing mentoring models that have too much structure, this model does contain structure. This structure is represented by the two-way areas and the circular construction of the model. These structures, however, are based on need rather than current models that set up structures first and then hope for, or force, alignment.

People

People include those needing mentoring and those participating as mentors. A wide variety and diversity of people are needed to serve in different mentoring relationships. Although some scholars have advocated for men mentoring women (Johnson & Smith, 2016), Bowling (2018) found that women need places (see next section) "where women can learn from other" (n.p.). Having women-only interactions and events does not prohibit, nor should it, thoughtful inclusion of male allies as part of the people dimension. However, we would recommend scaffolding—starting with encouraging women to share their experiences and practices to help other women. Starting with women only allows the women participants the opportunity to discover what they may need from mentoring and then to discuss with one another what they may need from male allies. This scaffolding of including women first and then potentially expanding to include men ensures that the people dimension of the RPM model meets the needs of the women who want to participate.

The number of people needed for an RPM model to work varies on the commitments and, more importantly, on the needs of those involved. The model only succeeds when people involved are engaged and available to build long-term and more involved relationships, rather than simply thinking of mentoring as another short task on their to-do list. Members of the organization at all levels should be encouraged to participate. From senior managers to those recently hired, it is crucial for a wide range of participants who bring unique experiences and levels of commitment. Through their experiences and participation, participants can provide insights into new ways of thinking.

An important aspect of the people dimension is that although the RPM model is participatory and eliminates many of the negative aspects of hierarchies, someone or a group of people still need to lead the coordinator efforts. As with any initiative, a mentoring initiative only works if there is ownership by all those involved, which includes the organization ensuring that someone is in charge. However, for the RPM to work effectively, those coordinating the effort need to ensure that it is a flat mentoring system rather than one of the hierarchical models. For example, the academic Women in Technical Communication has a steering committee that purposely "steers" rather than dictates, and it does so by consistently asking for anonymous and/or confidential feedback and ideas from those women who participate.

Places

Traditional models have face-to-face meetings, although models that leverage technology often do not include face-to-face meetings but can still be limited because of the lack of personal interaction and the limitations of various technological mediums. One of the problems with current mentoring models (see, e.g., Ragins & Kram, 2007; Rodrigo et al., 2014) is that they often rely on specific, singular spaces for the mentoring process. Women often lack power in the workplace and may have difficulty finding not only people, but places where conversations can occur. The RPM model understands the need for multiple places to meet and interact so that women can feel safe to talk about issues that concern them. These places should include face-to-face gatherings as well as a variety of online opportunities.

For example, women may not feel comfortable sending a message via the organization's email because organizational email is not private nor secure. Different communication channels need to be established that have varying degrees of privacy and security. There can be open channels where quick questions can be posed,

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but having more secure and private opportunities to communication are also important. Although it would make sense to have a designated space within the organization for mentoring meetings and conversations, it is also important to encourage face-to-face meetings outside of the organization, which would afford women the opportunity to discuss issues more freely.

Having multiple places enables different kinds of relationships to build. Opening up where mentoring occurs also means that mentoring can and should be done on the fly with quick questions that can be answered by any number of people. Having alternate places—physical (within the organization and outside of it), social media, and virtual—for mentoring also means there is a flexibility that encourages mentoring across organizations.

Resources

Even though people remain the most important resource, RPM stands a better chance of success with additional resources that create a useful and helpful structure. When we use "resources" here, we mean tangible things such as reading materials on common topics (e.g., how to overcome the double bind of personality traits, such as women being aggressive and men being assertive), frequently asked questions with answers (e.g., common topics in learning a new organization or how to negotiate more effectively), organizational support for gatherings (e.g., having someone on staff who helps to publicize events), or money for refreshments. Resources also include setting up a limited infrastructure like an online hub and specific communication channels.

Resources are necessary for women's mentoring initiatives because of the uniqueness of some of the issues that women face. Having additional resources from which women can draw provides multiple sources of information to help women make decisions. For example, negotiation is always a difficult topic, and, after a conversation with someone who was successful, a woman may like part of the approach but feel she cannot implement it. Additional materials would help to place the personal experiences and insights received in mentoring with other views. As another example, the communication channels are vitally important for women and mentoring. Much like the need for safe spaces, different communication channels are necessary to afford varying levels of privacy and security for issues

facing women. It would not make sense to discuss on company email an issue of harassment by a supervisor. Having other communication channels and ways to receive immediate or quick feedback on an issue makes the RPM model unique.

Additionally, resources can also be a flexible category for whatever the community needs that goes outside of the bounds of simply keeping the RPM model moving forward. For example, as Women in Technical Communication has matured, we realized, based on feedback from participants, that they need summary notes from a series of conversations that are conducted in an online space. These notes (capturing the question and answers in a way that participants still feel as though they can speak freely without repercussions) have become another set of resources. These documented records that resulted from online conversations were not something originally envisioned as a resource. With the variations of how the RPM model could be implemented, we encourage an open and flexible approach to what resources can mean and how they can be interpreted and delivered.

Affect

While, at first glance, one may wonder why we did not choose to go with "emotion," we opted to call this dimension "affect" because we wanted to emphasize that emotions and stress are connected to a person's body. Affect includes both embodiment and emotion, and emphasizes the idea that mentoring needs to consider the whole person. The ongoing micro-aggressions, harassment, and struggle to be seen, heard, and respected that many women face can take a tremendous toll mentally, emotionally, and physically. Numerous studies have shown the links between ongoing high stress and overall health (e.g., Nelson & Burke, 2018) so the model must include a dimension that highlights the whole woman: emotional, mental, and physical.

Beyond emotional intelligence (e.g., Chun et al., 2010), affect considers the intensities between people—between bodies—and their emotions that often take place in workplace contexts. Affect also captures the spirit of the RPM model in offering a common ground to let women know that they are not in any situation alone. Affect emphasizes the relationships between women and this dimension helps to situate the primacy and importance of listening and care that are necessary to build supportive, trusting mentoring relationships. In

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other words, affect encourages attention to the fact that those participating in mentoring are people with all the complexities of thoughts, feelings, fears, and reactions of any human being.

We hesitated to gender the model, particularly in terms of affect (or emotion), but one of the distinguishing characteristics of RPM is in the way the model builds safe spaces where true listening and trust-building can take place. Affect also accounts for the embodied reactions that often occur as a result of a problem or harassment that women in particular face on the job. This dimension takes effect when those participating take the time to learn about and then sincerely listen to these problems to ensure that the spaces and places where mentoring takes place are truly places where an honest dialogue can happen around important topics affecting women in the workplace.

Domains

Even though women across industries may share similar experiences, successful mentoring is linked to similarities in industry type and domain knowledges. For example, Women in Technical Communication in higher education was founded to address the needs of women faculty who share the domain knowledge around academic technical communication. The experiences of faculty in this area differ from even other faculty members who may reside in the same department (such as women faculty in literature or women faculty in organizational communication). Thus, the RPM model encourages those with knowledge in specific domains to gather. This domain knowledge can relate to a specific industry (e.g., user experience) or to a specific organizational culture (e.g., women from across different divisions within the same organization).

Sharing domain knowledge enables women to come into the mentoring process with similar foundational knowledge and immediately allows for a connection between participants that may not be present across domain knowledges. Even though this feature would be useful across any type of mentoring model (i.e., other models that are not exclusively for women), the idea of a common connection allows participants to start on equal footing and to be able to share their concerns and questions with a common starting place.

The question of how to interpret what "knowledge domains" means affords RPM the flexibility to be

useful in any type of organization. For example, while the Women in Technical Communication example (and the workplace model presented below) share a knowledge domain around a particular subject matter, organizations can implement the RPM model across related divisions that commonly interact. No matter the interpretation of the knowledge domain, the model encourages women to enter into mentoring with some common, shared foundation that can immediately open up opportunities for shared experiences, which is the final dimension of the RPM model.

Experiences

To flatten hierarchies, the experiences of participants are the primary focus and not the positionality of those in the mentoring process. Like other minorities in the workplace, women must deal with more complex issues such as microaggressions and the need to advocate for themselves. In addition, women are confronted with other issues of work-life balance, including caregiving for children and aging parents. Certainly, women are not the only gender taking care of others, but it is a relevant issue for work-life balance. Acknowledging women's experiences is a major component of this mentoring model. By foregrounding experiences in this model, we aim to ensure that the diverse and different needs of women have a better chance of being met.

RPM's emphasis on experiences allows for growth and development that encourages both an ongoing, primary mentor that remains for a longer period of time or that allows for the primary mentorship to change as the person progresses through her career. In other words, RPM emphasizes that mentors should be based on the current experiences and questions that a person may need help with, and, because of that, the primary mentor may change, may stay the same, or may change her role. At any given time, someone may have multiple mentors based on different experiences and needs, and as the needs change or shift, mentors may need to change as well. For example, junior employees may experience issues on that job that senior employees no longer deal with; thus, mentee needs to find someone who has recent experience with a particular issue to help determine ways to address it. This is not to say that multiple perspectives should not be sought out, but it highlights the fact that mentoring based on experiences means ideas and support can come from those who are equal or below in organizational

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units. In the next section, we describe a case study in which an organization has begun to implement the RPM model as a way to demonstrate how the model works in practice. It also encourages different kinds of experiences to be represented, supported, and shared because of how this approach can move across organizations and levels rather than rely on a hierarchical support.

WORKPLACE EXAMPLE

During the time that Women in Technical Communication was being implemented in higher education, one of the authors of this paper partnered with an organization built by women for women in the user experience (UX) community. Launched in 2013 by user experience professionals Georgie Bottomley and Lizzie Dyson, Ladies that UX (LTUX) was founded to make space for networking and camaraderie among professional women in a male-dominated field. LTUX is a global organization that strives to connect and support women across the user experience industry. With more than 53 groups representing cities across 25 countries, the group works to help women find one another in an industry that is woefully lacking female representation. LTUX is an organization that has experienced tremendous growth in a short time, and the founders wanted to understand how they could support their local leaders. For one of the authors of this paper, working with LTUX provided an opportunity to research mentoring models and to subsequently refine RPM in a setting outside of higher education.

Dimension: People
LTUX started with the vision and inspiration of two women. While they maintain a presence within their local environment in Manchester and London, UK, they have mentored and inspired women all over the world. The ways in which the various LTUX describe themselves speak to their supportive mentoring culture where the emphasis is on activism, support, and gender, and emphasizes the people dimension in specific ways.

MeetUp.com is one of the digital spaces used by local leaders to help organize their LTUX group. On MeetUp.com, organizers can decide on what they will name the members of their Meetup group. This user interface flexibility has helped local leaders create a visible ethos for their city through these choices:

- a group in Grand Rapids, Michigan, US, refers to their members as "advocates,"
- groups in Durham, North Carolina, US; Tokyo, Japan; and Amsterdam, Holland refer to members as "Ladies" or "UX Ladies,"
- groups in Utrecht, Netherlands; Los Angeles, California, US; and Detroit, Michigan, US refer to their members as "UX'ers."

Such naming choices give us insights into how these city groups are situating themselves and identifying their members and, in some cases, their mentoring style, which is directly connected to the people that help manage and steer the local communities.

Dimensions: Places and Affect
Through monthly meet-ups, local group meetings create "a welcoming, transparent community of women that work in UX, who positively promote and teach each other" (Ladies that UX). Noting that women employees are woefully in the minority at technology workplaces, the original LTUX employed the dimensions of both place and affect simultaneously when they looked to create an organization that would meet after work and in a more relaxed location, such as a pub or restaurant. For the founders of LTUX, it was critical to create a physical, in-person space where women were able to openly discuss workplace issues and find camaraderie with other women. This safe space away from the women's workplaces is also an indirect acknowledgement of the emotion, stress, and physical fatigue that is often associated with working through challenging workplace issues. Even though the founders of LTUX may not have identified part of their mentoring as affective, they were most certainly enacting that role through their approach to considering all aspects of the women's lives and bodies.s

Dimensions: Domains and Experiences
As stated on the official LTUX site, "If you're inquisitive, enthusiastic and interested in making the world a better place for users, you're one of us." During these meet-ups, these professionals join together to watch presentations, participate in workshops, and exchange ideas. A major emphasis of this group is to help women learn about the UX field more generally and how to position themselves in the market more specifically. Through these mentorship activities, LTUX participants are able to benefit from a shared

mentorship space outside of their own workplace employer. This kind of mentorship is vital to create safe spaces for creative, supportive problem-solving for women, giving the participants resources that they typically cannot find within their own workplace, while also sidestepping the prevalent issues of gender bias and discrimination.

The success of LTUX hinges in large part on the RPM dimensions of domains and experiences. The founders of LTUX recognized that women who shared the common knowledge domain of user experience needed to be brought together because many women in UX may be the only women at their workplaces. Thus, the knowledge domain is so important to the success of the model because women who participate are starting out with a common foundation through the knowledge domain. Once brought together through sharing a common job title or work responsibilities, women in LTUX were able to draw on the diverse experiences of its members to provide quality content. The mentoring aspects of this organization are made clear in the ways in which they meet in low-stakes environments and the kinds of materials they share through talks and themes. These specific moves are worth mentioning to illustrate how mentoring models can work best for women in industries, such as user experience, where they are in the minority. The founders of LTUX are clear about the reasons why they created their organization: They had no mentors in their workplaces—no mid-career and senior women who could mentor, lead, and help support them at their workplaces. This dearth of women in leadership positions spurred on the LTUX founders to establish an organization that would specifically focus on supporting, mentoring, and guiding women in these positions.

LTUX provides an ongoing case study of the RPM model and how it can be successfully implemented in the workplace. LTUX illustrates the flexibility and necessity of the different dimensions—people, places, affect, domains, and experiences. The flexibility of the model is also on display since LTUX does not implement all six dimensions, nor do they implement the dimensions equally. For their purposes, LTUX relies most heavily on people, places, domains, and experiences, while resources and affect are not as dominant in the broader implementation of the RPM model. In the next section, we describe how to put the RPM model into workplace practice.

PUTTING THE RPM MODEL INTO PRACTICE

The implication of the RPM model is first and foremost that it provides a necessary tool to help women succeed in the workplace. Recent research (Srivastava, 2015) has shown that women gain more from mentoring than men gain, so mentorship becomes an essential tool to help women flourish in the workplace. Implementing mentoring models, such as RPM, also provides organizations with a unique opportunity to meet the needs of a diverse workforce. The body of literature about multigenerational workforces (Gay, 2017) and the needs of different generations in the workforce (see, e.g., Rentz, 2015, for a look at Generation Y) points to the necessity for organizations to expand the way they think of mentoring, and the RPM model provides that sort of dynamic and flexible ability to work for different types of people and in different organizations.

Even though we focus on women, the model is also an ideal construction to begin learning about and developing mentoring practices with communities of color and indigenous and LGBTQ+ communities, among others. The dimensions of affect, people, and resources are already in place within the model to assist organizations with finding ways to better mentor and train on inclusivity practices.

To put the RPM model into practice, organizations need to start with five interlocking steps:
1. Align with organizational goals
2. Secure ownership and buy-in from management and employees
3. Mentor the mentors
4. Allocate resources and build infrastructure
5. Develop communication channels

Align with Organizational Goals

When we speak of an organization's goals, we mean the overarching philosophy in general and the specific goals the organization has to support its employees or members. We are thinking broadly when we consider organizations from a single company to a national organization around a specific area of knowledge (such as the publisher of this journal, the Society for Technical Communication). The approach to implementing the RPM model will be somewhat different, depending on the organization's overall goals. For example, how the initial structure is created will be different for an

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organization that is trying to initially solve problems that women, or other marginalized employees, face, as compared to an organization that is trying to give women space to advance their careers.

This sort of model will be harder to evaluate because it is more organic, takes longer to build, and needs innovative metrics on what "success" is and how it is defined. One cannot rush mentorship and trust, and those successes are much harder to quantify. However, from our own experiences and from what we have learned through the LTUX case study, a number of ways exist to evaluate success, including ongoing participation numbers (even if it is not the same people participating) and focusing on the recursive nature of the model and asking for feedback (both positive and ways to improve).

Get Ownership and Buy-in From Management and Employees

We believe in the recursive, participatory nature of the model, but it is unrealistic to think that this sort of process will work without leadership or buy-in. RPM only works with a dedicated commitment from the organization, or even a small group of people within the organization, to launch, support, and maintain the model.

Having employees who are interested be engaged with this model is essential. Employers can help to incentivize participation by making time, space, and resources available for employees. Again, RPM does not need to involve everyone or even the majority, provided it is supported by leadership.

While the RPM model needs someone(s) to direct its activity, we also recommend thinking about implementing a mentoring model that works across individual organizations. For example, the LTUX case study shows that it centers on a domain of knowledge outside of the participants' workplaces. Instead, it draws women who work in UX broadly from different organizations. Our own experiences within higher education point to the fact that the success of the model is partially due to the fact that the mentoring crosses institutions both in participants and those who help steer and organize events.

Mentor the Mentors

We would be remiss if we did not point out the one potential limitation of the RPM model, and it is one that needs careful consideration during the implementation phase. This model requires training and mentoring of mentors to ensure that they understand how to appropriately interact, react, and provide feedback. Not everyone makes a good mentor, and in this sort of flexible model, it is impossible to ensure that all advice is good advice. Because of the distributed and grassroots nature of the relationships being built, this model lacks hierarchy and top-down rules-setting. This lack of hierarchy and rules-setting is by design, and, in fact, it is one of the strengths of this model. That said, it requires mentoring the mentors and providing them with training as needed. RPM is more susceptible to ineffective mentoring if such training is neglected. However, we feel that this potential cost is far outweighed by the benefits noted here. Starting this program requires people committed to listening and understanding the issues that women face in the workplace. Those who step into the role of setting up the RPM model need not be experienced mentors, but they do need to approach the endeavor by listening to what women need and ensuring that they are providing opportunities for feedback and reflection. If those in the role of steering and supporting the RPM model are not trained mentors, then it is also a good idea to bring in someone with expertise and experience in mentoring to provide support and information.

Allocate Resources and Build Infrastructure

The most important resource to cultivate initially is people. For mentors and mentees, the RPM model allows for a wide variety of experiences and knowledge to be recognized, celebrated, and shared. With the distribution and participatory nature of RPM, it also means that the work of providing mentoring is distributed, which allows for less burnout and also diverse insights. Outside of people, however, it is important that there is a concentrated effort to simultaneously build a resource repository that can address immediate concerns or provide additional information around important topics. For example, the question of negotiation for new positions is a perennial topic of concern for women. Someone participating in RPM may have a conversation with a trusted member of the community. However, it is also helpful to have additional resources that provide alternative strategies and/or resources that point to important information such as average salary ranges and expected

job responsibilities. The RPM model encourages the participation of men and those people who have typically held power in an organization. Involving and encouraging male advocates will strengthen the infrastructure and provide additional vital resources for ongoing sustainability.

Develop Communication Channels

One of the biggest strengths of the RPM model is its recursive nature. Therefore, it is important to develop consistent opportunities for feedback loops to improve and implement processes at the request of those participating. Communication channels are key to building strong and numerous relationships within the community so that those participating know how to reach people they may need to help with a specific situation. Additionally, communication channels can market and promote events that can build and grow the RPM model organically. Constant communication across a number of channels (traditional organizational email, social media, and Slack, to name a few) help to build a community with shared interests and concerns.

CONCLUSION

Women in the workplace, no matter what or where those workplaces are, need mentoring. The RPM model is a flexible and scalable model that provides an approach to mentoring that is sustainable and, more importantly, recognizes the experiences of the mentors and mentees, focuses on domain knowledge, encourages considerations of the whole person, and addresses the hierarchical structures of existing mentoring models. Even though the LTUX example is still in progress, it demonstrates the promise for the RPM model's approach, and it also suggests that the RPM model could be used to develop more inclusive mentoring practices. We encourage listening, learning, modifying, and improving upon this model, particularly for women, people of color, and other minority populations in the workplace.

Recent research (St.Amant & Melonçon, 2016) highlighted that workplace practitioners were open to and willing to implement mentoring solutions based on academic research. The Recursive Participatory Mentoring (RPM) model is an example of such research that had its origins in academia and has moved into the workplace. The STC, with Adobe's support, has

formed its own special interest group focused on the needs of women in the profession. Without dedicated support structures such as the RPM mentoring model, women will continue to lag behind men in career growth opportunities. STC has the perfect opportunity to incorporate the RPM model into the organization and develop a researched case study that would not only benefit the field of technical communication, but also benefit mentoring research as well.

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Audio Description: Making Useful Maps for Blind and Visually Impaired People

By Megan Conway, Brett Oppegaard, and Tuyet Hayes

ABSTRACT

Purpose: Technical communicators concerned with such issues as media accessibility, disability rights, and universal design could explore fertile scholarly ground by investigating Audio Description more through applied research methods. This article illustrates such potential through the explication of a transmodal-translation process conducted on National Park Service brochures, including interpretation and transformation of their maps into acoustic forms.

Method: Our mixed-methods approach included feedback from diverse blind, visually impaired, and sighted stakeholders, including administrators, media designers, and representative park-site users. These insights were then tested through field work and complemented by multiple interviews and focus groups. During this process, we developed digital tools—including open-source software and free mobile apps—for iterative testing and sharing of ideas.

Results: Besides generating thematic and diverse insights about this topic, our study also established, developed, and refined a set of best-practices guidelines based on research in the field, informed by gathered empirical evidence. These guidelines are intended to support subject-matter experts at public attractions, regardless of discipline, in the creation of better, more accessible maps through Audio Description.

Conclusion: How could a person possibly transform a complex, fully visual, and printed-on-paper map into useful acoustic media for blind and visually impaired visitors? After consulting the scattered, related literature, we oriented our efforts toward the multi-faceted technical communication practice of localization. We then dedicated our project resources to real-world interventions through both the application and the development of audio-description strategies and digital-media-delivery systems as a practical and universal approach to these related translation and localization problems.

Keywords: maps, audio description, blindness and visual impairment, mobile apps, best practices guidelines

Practitioner's Takeaway:

- Through Audio Description, and with proper tools, a subject-matter expert could adequately translate static media—even a visual artifact as complicated as a map—for blind and visually impaired people in efficient and effective ways.
- The transmodal-translation and localization process we created generated a set of foundational guidelines that lead a describer through field-tested steps and provided meaningful examples of description as models.
- This audio-description process revealed the critical importance of: 1) Identifying and maintaining the artifact's purpose, 2) Providing an initial short description for information navigation, and 3) Elaborating, with a more-detailed description of the artifact.

Megan Conway, Brett Oppegaard, and Tuyet Hayes

INTRODUCTION

We asked various stakeholders—administrators, media designers, and representative users—for advice about best ways to audio describe a map, and many—including those without sight—responded with a puzzled look and a retort like this: Why would a blind person need, or even use, a map? Besides societal, cultural, and legal arguments for making such media inclusive, which we will address, this study also deconstructs and challenges the pervasive perception that some visual media, such as maps, are irrelevant or even useless to people with visual impairment or blindness. Our applied research, in turn, opens several fertile paths for technical communicators to explore related constructs. Transmodal translation has become the phrase of choice for scholars studying such semiotic movement across modes as an external, material practice (Newfield, 2014). Our approach to Audio Description envisions that conversion as a transmodal-translation process that transforms information from purely visual to purely acoustic discourse. In addition, through our UniDescription Project, www.unidescription.org, we freely share open-source Web tools and mobile apps in support of this type of novel inquiry.

As content of a media channel—whether as the primary mode of communication or in a supplementary role—Audio Description promotes information accessibility and aligns with technical-communication ideals of universal design, in which information, products, and environments are usable by all people—regardless of age, ability, or status in life—without the need for adaptation (Ostroff, 2011). For their part, audio describers look at visual media, such as maps, and transform the essence of this information explicitly made for eyes into content designed and tuned specifically for the ears. If properly integrated and interwoven into an environment's media design, Audio Description could seamlessly deepen and enrich access to those with visual impairment but also assist those who are print dyslexic and, even more broadly, those who simply appreciate information experienced audibly. The many, widely practical uses of open and closed captioning—such as captioned video displays in noisy public environments, including many restaurants and airports—provide a clear model of how universal design practices can benefit more than just primary and strictly intended audiences. Technical communicators, though,

have yet to thoroughly investigate Audio Description in depth, which creates a prime opening for a subfield of scholarly inquiry to emerge.

Along this vein, during the past three-plus years, we have conducted multiple rounds of investigation, analysis, and application of our findings in contexts of professional training and workshops. We also have guided efforts in the wilds of various audio-description contexts, including production and in-situ experimentation, collaborating with subject matter experts at more than 50 National Park Service sites throughout the United States. These collaborators were typically staff members deeply trained in the cultural, environmental, and historical importance of their sites and in various interpretative techniques designed to communicate that importance to the public. But they also were people mostly new to Audio Description and the ideas around it.

During our Hackathon-inspired sessions, which we called "Descriptathons," these subject matter experts—working at the parks and creating Audio Description of their park brochures—consistently and frequently stated that maps were the most complicated and frustrating of all of the static visual media we collaboratively discussed and described (including photographs, illustrations, collages, timelines, and infographics). So we started there, at the most-difficult puzzle to solve. To put the related research question plainly, we wanted to know: In what ways can technical communicators be productively and helpfully involved in the conversion of static media, such as maps, into accessible media for those who cannot see or cannot see well?

To illustrate, we begin with one of our key findings, part of an affinity cluster of qualitative comments about the core concerns here, which we will return to later in the paper. In this first case, after completing description of all of the various components on his particular park's brochure, a sighted ranger in Alaska's Denali National Park and Preserve summed up the situation this way during a post-mortem interview: "You could spend a lifetime trying to figure out (how to describe) the map…. What's the purpose of the map?"

For the sighted, visual maps efficiently depict distinct features, such as landmarks, as well as structural information, such as distance between places, and even the relative directions of those features compared to others, which all can be assessed with a glance (Stock et al., 1995). For blind and visually

AUDIO DESCRIPTION
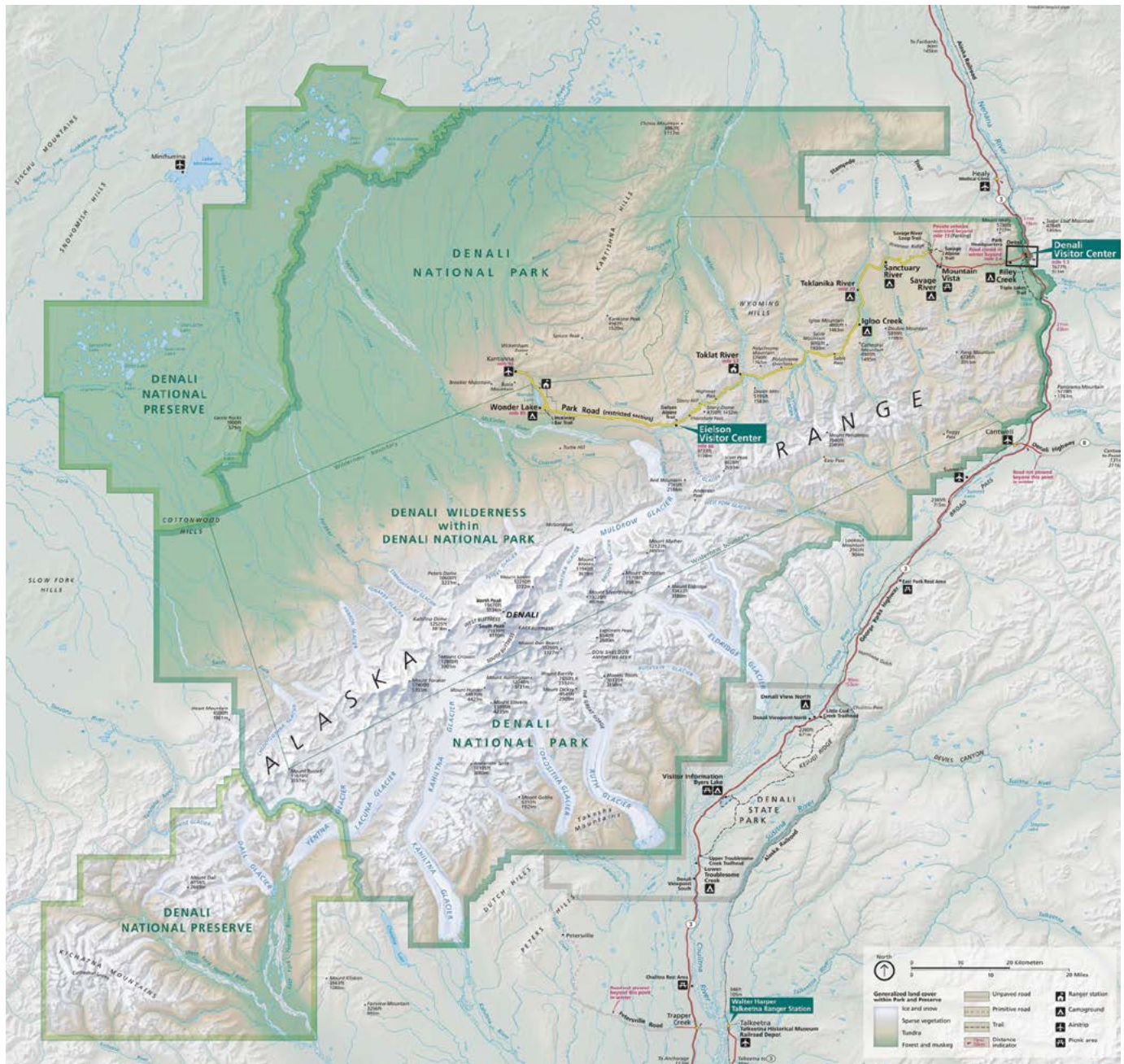
Figure 1. Denali map on the Denali National Park and Preserve UniGrid brochure

impaired users, though, map exploration generally has three foundational purposes: 1) For orientation and movement, 2) For exploration of locations of interest, and, 3) For learning about a place (Buzzi et al., 2011). How those purposes manifest, interact, and overlap generally remain a mystery in practice, though, due to scholarly and industry inattention to this topic. Therefore, in this paper, we have undertaken an exploratory mixed-methods approach—triangulating data gleaned through semi-structured interviews, focus groups, and field work—to establish the importance of this topic for technical communicators and then to develop topics of interest around this research area, which, in turn, we think, will help to establish best practices within it. After presenting a foundational literature review to acquaint technical-communication

audiences to key aspects of Audio Description and the context of our findings, we also offer here an initial set of best-practices guidelines to improve Audio Description of maps at this stage but also to serve as an example of how this type of applied research can be fruitful, focused on a research question even more finely expressed as: In what ways can a purely visual map be efficiently and effectively audio-described?

AUDIO DESCRIPTION AS A TECHNICAL-COMMUNICATION ISSUE

Three of the major technical-communication journals—*Technical Communication* (TC), *Technical Communication Quarterly* (TCQ), and *IEEE Transactions in Professional Communication* (IEEE TPC) —have published at least one special issue about "accessibility" since the mid-1990s, and they have published various other articles on related topics as well (Oswal, 2013). Meloncon (2013) established the importance of accessibility matters in the field of technical communication with her edited collection "Rhetorical AccessAbility: At the Intersection of Technical Communication and Disability Studies," offering essays that address the intersection of disability, rhetoric, design, and accessibility (Reynolds-Dyk, 2014). Audio Description, as a subfield in this area, though, rarely gets mentioned in technical communication works and has yet to get much dedicated review and analysis. Within what arguably gets classified as the five highest-impact journals in technical communication—*TC, TCQ, IEEE TPC, Journal of Business and Technical Communication*, and *Journal of Technical Writing and Communication* (Lam & Boettger, 2017) —we could not locate via the OneSearch Web tool any articles or abstracts that included the term "Audio Description," a void verified by hand in this *Technical Communication* journal through an article-by-article search of its issues over the past five years. Of the 514 English-language and peer-reviewed articles located through the search term "Audio Description" via OneSearch, two journals (*Perspectives: Studies in Translatology* and *British Journal of Visual Impairment*) accounted for about 20 percent of all published material, with the rest scattered among a variety of mostly interdisciplinary journals.

We also searched for alternative terms, such as "visual description," and looked across disciplines to try to locate a mass of academics magnetized to this particular area of study, finding no related community of scholars. We did identify nine scholarly books focused upon Audio Description but with no clear clustering in any particular field, and none of those books specifically aimed at a technical communication audience.

Technical communication, therefore, has a rich opportunity to both advance empirical understandings of Audio Description and to stake a significant disciplinary claim to this particular scholarly area, as it has already done to some extent with captioning studies for people who are deaf or hard of hearing. In such an interdisciplinary environment, disagreement on terms could stymie scholars. Therefore, among a few similar labels circulating in this community, we chose to consistently use the terms "audio describing" (or "audio described") to encompass the complex transmodal-translation process of remediating visual media into acoustic media and then localizing content for audiences of blind and visually impaired people. Such interventions—integrating translation, localization, and design—are common in technical communication research but not commonly applied as Audio Description to date (Getto & Sun, 2017; Gonzales & Turner, 2017; Gonzales & Zantjer, 2015; Meloncon, 2013; Shivers-McNair, 2017). We also chose to describe these remediated end products in acoustic form as "Audio Description," with first-letter caps, to signal both the unity forming in the field around that label and the distinguishing features of its end product. In these labeling situations—rather than using alternatives also circulating in related academic discourse, such as video description, visual description, descriptive video, etc.—our choice for terms aligned with common use by various media-accessibility organizations around the world, including the American Council of the Blind, the U.S. National Federation of the Blind, Media Access Australia, the Audio Description Association of Scotland, and the U.K.'s Royal National Institute of Blind People.

MAPS AS A FUNDAMENTAL HUMAN CONSTRUCT

In establishing the importance and boundaries of a place, maps are no trivial aesthetic flourish. They have been carefully designed and applied to various contexts for

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thousands of years for many critical societal purposes. They have been used as conceptual tools, for example, to present diverse and overlapping paradigms of the human and physical environment, including visible and non-visible geographical features but also intangible symbolic frameworks. Those include environmental processes (e.g., weather patterns over time), demographic relationships (e.g., wealth distribution in a community), and worldviews (e.g., clusterings of political affiliations in a region) that help to shape the ways in which we think about places (Montello et al., 2018). As technical communication artifacts—malleable in purpose—maps can illustrate characteristics of a place that are physical, political, and/or topographical, showing representations of phenomena as diverse as climate, natural resources, and roads.

Maps complement billboards, street signs, landmarks, and other types of location-based visual cues to give sighted people a continual sense of their surroundings as well as constant semiotic feedback about a place, beyond what any person could directly understand through unmediated and unextended sensory data, as if walking through a new place alone, disoriented, and blindfolded. As a primal orienting force, maps traditionally privilege the eyes and have been designed for purely visual use, with subtle visible cues—such as the thickness of a line, colors, shading, etc.—conveying nuanced layers of meaning strictly determined by a sense of sight. The U.S. National Park Service, which is the caretaker of many of the country's most precious places, prominently features maps in its paper brochures that are handed to visitors as they arrive, as a universal way to welcome and orient people to each important public resource. Such broad outreach with silent and visual brochures, though, and often without equivalent alternatives, could also come across as exclusory.

Built and heavily mediated environments— as National Park Service sites generally are—can be disorienting, difficult to interpret, and even intimidating for people (especially those with visual impairments), particularly when they lack a mental map of the surroundings and are provided little or no sensory data to generate such a map (Schinazi et al., 2016). An appropriately mediated representation of a place, such as a map, is essential for people to have the ability to move about independently, to localize places that cannot be directly perceived because they are

hidden or remote, and to plan trajectories on the basis of this knowledge, which is of great importance and concern in common human existence (Thinus-Blanc & Gaunet, 1997). Such matters also are of primary concern in the field of technical communication.

SOCIETAL, CULTURAL, AND LEGAL ARGUMENTS FOR ACCESSIBLE MAPS

The U.S. National Park Service (NPS) attracts about 330 million visitors a year, about the same number of people who live in the United States. For privacy reasons, it does not track patrons by discrete demographics, such as visual impairment or blindness (Rott, 2016; NPS, 2018). Of those visitors, though, nearly 80 percent report looking at the site brochure, the number one most-common activity at any NPS site, tied with viewing outdoor exhibits (National Park Service, 2011, p. 16).

The World Health Organization, meanwhile, estimates 253 million people around the globe are visually impaired or blind, 81 percent of which are 50 or older. That age group is a significant segment of NPS visitors, often parents or grandparents that visit NPS sites, frequently with their children or grandchildren, perpetuating both interest and engagement in public places (Bergeron & Redlitz, 2015; National Park Service, 2016). As just one example of the many usability constraints inherent to these sites, transportation to national parks—often located far outside urban areas—can be challenging to coordinate for people with visual impairment or blindness. Dedicated programs and services—if they even exist at a site—can be difficult to discover or distinguish from other visitor services. Marketing and outreach from parks about such programming can be spotty or nonexistent. So few involved in this environment find it surprising that NPS staff members consistently report as rare any visits by people who are easy to distinguish as blind or visually impaired, such as those carrying white canes or traveling with service dogs. Without compelling Audio Description, and other related services, to support their visits to the sites, several members of the community stated in our discussions, why would they?

Because of the growth and change in age structure of the world population, with people throughout the planet living longer, blindness and visual impairment

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are accelerating on a global scale leading to projections of both blindness and visual impairment tripling by 2050 (Bourne et al., 2017). Those within the second (moderate), third (severe), and fourth (blindness) levels on WHO's International Classifications of Diseases (2018) do not have equivalent access to many levels of society that others might take for granted, such as constant location orientation through checks of street signs, wayfinding via prominent visual landmarks, and common visual scanning techniques for quickly interpreting maps. Hence, a clear need for such information exists and is growing. Audio Description, in turn, could help reconnect people to society, places, and communities.

A sizeable audience of consumers of such content, including at NPS sites, therefore, appears in at least a latent form. In the United States, for example, depending on how and when the vision-loss community was measured, the number of people who are visually impaired or blind ranges from roughly 7.3 million (National Federation of the Blind, 2015) to 25.5 million (American Foundation for the Blind, 2018). Impairment, meanwhile, affects not only the diagnosed individual, but it also can affect access to public discourse and activities for close families, friends, colleagues, etc., operating in tandem with connected companions who are visually impaired or blind.

Lastly, at the most fundamental level of legal compliance, Audio Description addresses U.S. federal law mandates, such as those within Sections 504 and 508 of the Rehabilitation Act of 1973, which require equivalent access for persons with disabilities to public facilities, learning materials, and other types of information resources. The NPS has extended this requirement into a bureau-wide philosophical mantra of an "All in!" campaign, intended to improve nationwide accessibility to its resources by 2020, among other related initiatives. Our research project, in conjunction with the NPS—also in collaboration with the American Council of the Blind, and external funders, such as Google—aims for broad and long-term solutions to these accessibility issues through the development of digital platforms, tools, and high-quality content.

METHODS

Through our literature review, we scanned the identified articles and books, looking for clearly defined best-practices guidelines and mentions of maps. We then used those findings, as paltry as they were, to create a list of 14 open-ended questions that we thought deserved deeper investigation on the topic of high-quality map Audio Description. Those initial questions (see Table 1) ranged from requesting broad guidance, such as "Where should we put our efforts?" to specific curiosities, such as, "Is it helpful to include the map legend in the description?"

We used this list as a framework for three types of feedback environments: 1) Semi-structured interviews with stakeholders in-person, via phone, and by email; 2) Semi-structured interviews with stakeholders in small groups in-person, in which they took turns answering questions but generally did not talk among themselves; and 3) Focus groups of nine or fewer stakeholders, during which dynamic interchanges between participants were encouraged and prompted by a research-team moderator. These data-gathering processes followed standard research procedures and protocols for interviews and focus groups, approved by our university's Institutional Review Board, including the following frameworks: Sessions were audio recorded (some were also video recorded), with transcripts created for each. Handwritten notes also were taken.

Our work was experiential in orientation and essentialist in theoretics, assuming both a knowable world and intent on "giving voice" to these diverse experiences related to map Audio Description and inherent meanings within that world, as conceptualized by Braun and Clarke (2012, p. 59). Using Glaser et al.'s (1968) constant-comparative mode of grounded theory, as exploratory and reflective in approach, the first two authors of this paper reviewed the transcripts and notes independently and used a combination of an open and closed coding system of content analysis, described in more detail below, to mark discourse related to best practices for audio describing maps when general consensus about the craft was expressed. We then compared and refined those codes periodically in search of theoretical common ground. Common practice frameworks in such content analysis work, as outlined and identified by Krippendorff (2019) was also used throughout, and that particular text was consulted as a reference guide when questions about methodological processes arose. As another illustration of the approach, we also marked elements related to best practices for audio-describing maps that indicated factors where

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Table 1. Initial set of interview and focus group questions

1. Overview question: How should audio describers handle maps?
2. Overview question: Where should we put our efforts, in relation to developing better map description?
3. How long should the Audio Description of a map be?
4. Should there be a short description and a long description?
5. What is the critical information that needs to be at the forefront (i.e. amenities, size of the park, purpose of map) ?
6. Is it helpful to include separate, pertinent info that gives users an overview of the story that is told in the map?
7. How important is identifying the amenities in terms of orientation?
8. Is it best to orientate people directionally (i.e. east, west) or to what you are literally looking at?
9. Should we divide out the various components of the map (i.e. amenities, trails, cultural references), or organize the description in terms of what the viewer is literally seeing in various areas of the map?
10. Is it helpful to include the map legend?
11. How important is it to know exactly where such things as trails and campgrounds are, and what is the best way to describe where they are?
12. How helpful is it to make an analogy to something else (i.e. looks like a bird)?
13. How important are park boundaries and is it helpful to describe the size and shape of the park?
14. Are there components of a map that it is simply not helpful to describe?

Table 2. Complementary interview questions, evaluation of app and products

1. What is your overall impression of the UniD App?
2. Was the structure of the material logical and easy to use?
3. How would you compare the UniD app to others you have used?
4. Were the instructions for use easy to understand and apply?
5. Which features did you like best?
6. Which features need improvement?
7. Were the descriptions of images adequate, too short, or too long? Give an example.
8. Were the descriptions of the map adequate, too short, or too long? Give an example.
9. How was the organization of the descriptions?
10. Were there components of the descriptions that were confusing or not helpful?

personal choice (or other factors) seemed to drive responses and elicit different responses from different participants, guiding us to key areas of inquiry.

We started this process with a deductive- and closed-coding system to determine what content was related to audio describing maps (coded as "related" or not). Then, that culled data (as related to the research question) was reexamined via an inductive- and open-coding system to tease out theoretical themes that spoke to this inquiry's primary objective, to learn more from the stakeholders about what current perspectives on this topic exist. We brought together these ideas through our perceptions of semantic similarities, clustering and reclustering map-related sections, as we compared our independent findings, until we reached what we considered a robust thought mass (which we describe as an affinity cluster) via those linked associations (Bazeley, 2017; Macia, 2015).

Once we had a corpus of thoughts about this subject separated into these affinity clusters, by map matters, we merged that data into various related semantic clusters, until we felt we had a good fit, as a way to consolidate clusters of content and nuance that both filtered extraneous ideas and also provided insightful and interesting juxtaposed meanings when combined with other comments. As Glaser et al. (1968) stress in describing this process, other researchers might have put these pieces together differently in a similarly inclusive manner, so these representative findings should be considered a subjectively interpretive presentation, based on what we considered logically consistent conceptual relationships within themes, as a method of distinguishing trees from the forest (Guest & McLellan, 2003). From this process, these theoretical themes, or affinity clusters, appeared to us and warranted further inquiry.

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We used the same list of questions for all feedback contexts during the first year of study, 2015, then expanded the conversations with a second set of questions (see Table 2) during the following years (2016–2018). We conducted a pilot study at three National Park Service sites in March 2016 (in Hawaii, California, and Washington, D.C.), in which park staff described their brochures, including their maps, with no specific guidance or training on this activity, followed by a proof-of-concept activity with eight park sites around the country, in September 2016. This was part of the first official "Descriptathon," which included some training as well as competitive and collaborative activities designed around gamification techniques. We since have offered a Descriptathon 2 (with 28 parks in February 2017), expanding and refining the processes of Descriptathon 1, and a Descriptathon 3 (with 12 parks in September 2017), with additional Descriptathons after 2018 producing complementary data not included in this study. During Descriptathon 3, and afterward, we systematically have been integrating the Audio Description created by park staff with our ensuing field tests of the created material—providing the park staff with a direct feedback loop from real audience members in real contexts—including conducting basic usability tests.

In total, during the three-plus years of data gathering, we completed interviews with 21 stakeholders with diverse perspectives on this issue. Those interviews took place through four separate small-group sessions, followed by individual phone calls or emails to each member of the group, requesting more information about specific points that were raised by that person, helping to form a thought cluster. In addition to these semi-structured interviews, we also brought together other groups of stakeholders for small focus groups (differentiated from the previous small groups by cross-talk being encouraged among participants). These sessions raised the same basic questions about the Audio Description of maps, and other related topics, only in more dynamic and interactive group settings, allowing for extensive interaction among participants. For a list of these sessions, including dates, places, participants, and protocol, see Table 3.

All of these sessions were moderated by a member of our research team, trained in interviewing and managing research focus groups. These focus groups typically lasted about an hour (between 30 and 90 minutes), depending on the size of the group and its engagement with the topic. All together, as part of the focus group stage of this data collection, we consulted with 90 people during these dynamic discussion settings, although 21 of those individuals also participated in the interview stage as well, creating a double count for some. Counting stakeholders only once, even if they participated in two feedback sessions, we consulted with a total of 69 individuals directly affected by, or involved with, Audio Description.

Both the interviews and focus groups were generally organized by topics but not confined strictly to discussions about audio describing maps. We also, during the course of the discussions, talked about broad guidelines for Audio Description and audio describing other types of artifacts, including photos, collages, and charts. In all of these sessions, we typically would expand our list of questions and raise the maps issue with an open and conversational volley, such as, "How should audio describers handle maps?" From there, we would engage with the issue through the list of questions in Table 1 and Table 2, dictated by feedback from the sources, and then introduce complexities into the discussions, asking basic follow-up questions about uses for map Audio Description as well as seeking examples and models of exemplars known by participants. These interviews and focus groups all devoted a significant portion of their time to discussing the Audio Description of maps.

FINDINGS

From the feedback we collected and grouped, through the described affinity clustering-and-analysis process, we identified several topics worthy of attention and further consideration, including and illustrated by the following theoretical clusters of descriptive data, given a top label to indicate the core premise of the binding codes that brought them together:

Affinity Cluster A: Audio Description, Especially of Maps, Needs Attention
As referenced in our introduction, many of the interviewees—despite being blind or visually impaired, or working within the professional Audio Description

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community—were as perplexed and curious about the topic of map Audio Description as we were. For example, a top administrator of a national association serving people who are blind or visually impaired, and who also is blind himself, said:

> I haven't ever really used a map, and I'm not going to sit here and say that not many blind people have used a map to navigate, but I don't know that a lot of blind people have used maps. We've been really more reliant on technology (such as GPS, infrared, etc.) to help us navigate.

In other words, maps generally have been perceived as inaccessible and unusable for people who are blind or visually impaired, because they are visually designed but also because they primarily are conceptualized as tools for getting from place to place, when, instead, they actually might have many other purposes, such as providing socio-historical context to a place.

A curator for the Library of Congress, who is blind and for years has specialized in services for people who are blind or visually impaired, acknowledged:

> I've never seen a good descriptive of a map before…. For mostly recreational reading material, (describers) just leave (maps) off. They just say maps have been omitted…. I don't think (our National Library Service describers even) describe maps. We tell them not to, because we're not going to pay them to sit around and figure it out.

A sighted consultant with a national association for people who are blind or visually impaired, who also operates an audio-description company and has written a well-circulated book about it, said that describing is:

> More art than a science. You can have 20 describers come up with 20 different descriptions. And they're all good. They're all correct. You know, fine. But there also are going to be some people who will come up (with content) that is just not correct. They're not good. They're not quality, and I get concerned about that, because so many people have not experienced description, and if the first experience is with bad description, they're going to turn it off, and we've lost them.

Affinity Cluster B: Audio Describers Need Additional Guidance

This collection of responses illustrates the inherent difficulties of describing a map, especially without robust and broadly accepted guidelines available for reference, with a clear need expressed for more attention to be paid to this topic.

For example, these comments came from the September 2016 Descriptathon, from a sighted park staff member in California:

> I had to kind of go painstakingly through (the map) trying to make that description flow as best as I could, which is a little difficult with maps, of course, but try to imagine what it would be like if I was not able to see the map, and imagine you're walking around (the site) or looking down from an airplane…. I tried to cover the major parts of the park, in kind of a linear fashion.

From a sighted park staff member in Alaska:

> The biggest hump for me was getting over my fixation on maps as being for people who are driving. The idea, like the voice who, you know, was going to tell you make a left turn here…. It gave me a sense of the other purposes that maps serve, beyond just providing people a navigation tool about how to get from point A to point B, but also that it serves for providing context for visitors about where they are in the world and the landscape forms and geography kind of things, like that, (and) your description can serve them as well.

Since we gave Descriptathon participants our initial guidelines, based on exploratory findings, some of the subject matter experts in this stage expressed that they were not adequate and instead tried to replicate the provided models, indicating a need for even further examples in the guidelines but also a desire for solid touchstones, as a way for a subject matter expert to begin a foreign process and create non-derivative content, such as this comment, from a sighted park staff member in Washington state:

> An exceptional description of (another park's map was provided in the training session), so I kind of put that in a Word document and then put another

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Word document next to it and kind of tried to follow that formula a little bit and tried to pull some of that language, but, of course, that's a much more complicated map to describe.

From a sighted park staff member in Hawaii:

"How do we know (what to describe), because there are so many things on it? … I think that was the hardest part (of the process), which I was working on, and so I kind of looked at the sample that somebody made (in the best-practices guidelines) and that description breaks down the steps, which is totally what I did.

From a sighted park staff member in New York:

I really liked on the (guidelines for the) map where they said, here's adequate; here's good; and here's a really good example. That would have been helpful in all the basic genres that you were showing us.

From a more philosophical and conceptual perspective, a sighted NPS media designer at Harpers Ferry Center said questions exist about the Audio Description of all media forms, but maps have unique complications, adding:

Are you describing the map in the way you would describe a photograph or are you describing the content that the map is intending to convey? If you are describing the content that the map is intending to convey, that's got multiple layers. How do you do it efficiently? Which raises the question of is there content that is exclusively conveyed by the map that is conveyed nowhere else in the brochure? Do you say we're going to describe the contact that is exclusive to this map? There are other places in the brochure that you could link them to.

During this stage of research, working with the subject matter experts in real contexts, we also took our guidelines and ideas about audio describing maps to a blind administrator at the Lighthouse for the Blind and Visually Impaired in San Francisco, to receive more feedback, which included this:

Clearly there are corners, if not entire swaths of (Audio Description) that have yet to really be figured out…. I think you lead with the purpose of the map. When you just say the word 'map,' people in their mind, they think of certain things, right? Like when I hear map, I have to remind myself that it might not just be a geographic map, it could be something completely different. So I think that matching up that person's expectations to what the sighted person has probably pretty quickly gleaned by looking at the map already, is important. You know, if I'm there, and I think that I'm going to get an Audio Description of a map that's going to tell me where each trail is, or something like that, and it is in fact a map that's more about historical things, I need to know that right away. So I want to see that more expectations are aligned properly for everyone.

Affinity Cluster C: Boundary Work Wanted and Needed in Audio Description

Maps appeared to be a most mysterious artifact to nearly all stakeholders we included, especially when we asked them for advice about how they could best be audio described. People had ideas about various aspects of such description, such as how long they should be, what they should include, and where they should start. But it was clear that few of our focus group members had spent much time giving the idea deep consideration. They did not have handy examples or well-worn guidelines available to follow. They did not necessarily want prescribed rules, either. So the desire seems to be for some structure but not too much structure, conceptualizing the translation process more as an art than a robotic activity.

An administrator at the Lighthouse for the Blind, who is blind, for example, said:

The really terrible example that I have is textbooks from when I was in college… . They would have people describing diagrams, and they would just jump into this whole description of a whole diagram, and you'd be lost because by the time they described the third concentric circle with lines in it, I didn't know what the point was anymore. So my inclination is start with the (larger) point (of the map) and then let me drill down into the detail…. I always like being able to drill down. If there's

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a map, and this is a map showing, I don't know, climate change in the different parts of California. And it has the north and the south and the central, or something like that, and then you could pick, you know 'Tell me about northern California. Tell me about southern.' (I like to) have a general description of 'this is what this map is conveying' and then being able to drill down or pick the features of interest.

A Lighthouse for the Blind media designer, who is blind, said:

I think that an Audio Description of a map should probably be more conceptual, in terms of explaining what the map is for, as opposed to describing the details of the map. Because describing the details of a map—in terms of trying to explain all the spatial relationships—could be very difficult, and frankly, to listen to all of that would be rather confusing. As opposed to, if you just say this is a map of the layout of a park, or this is a map showing the history of a certain event. Rather than saying that at 12 o'clock there's this object, and then at 5 inches to the left, there's this object, at 3 o'clock and at 9 o'clock are these other objects, to the right of that a second object. That's very confusing, because it's a linear listening process, so it's kind of like converting a two dimensional object into a one-dimensional description.

One important finding that contributed to our rethinking of our best-practices guidelines was the repeated perspective that if a map is going to be audio described, it needs to be thoroughly described without judgment on the part of describer about what is "important" or "most useful." To address the related issues, involving individual preferences (some users prefer a very short description, others a longer description) arguments were repeatedly made in this stage of data collection that both a short and long description should be made available. Another key finding was that there are important distinctions between the purpose and problems in describing a wayfinding map from other types of maps (such as ecological or historical). While non-wayfinding maps may be described in a similar fashion to a photograph

or an illustration, a wayfinding map is intended to provide information about navigation, which brings another level of complexity to Audio Description, such as how to design the media to encourage independence and agency.

Users discussed at length their desire to have a "map" that will help them navigate independently while they are visiting a park. This finding echoed other findings throughout our research process on maps for visually impaired and blind people. The stakeholders we consulted uniformly dream of being able to navigate the parks without having to be dependent on other people. Independent navigation truly allows for individual choice and the opportunity to be "alone" or to "be a part of" the group.

Many other proximate comments, meanwhile, raised questions about how much of the community's knowledge about this topic really is reverberated among its members versus a foundation in first-hand sensory experience and reflective thought. These comments often were personalized, as in "I like it this way," versus, "I like it that way." But we also became curious about subtle clustering of ideas, among subgroups, and how these proclivities might relate to when in life a person became visually impaired—such as at birth or sometime later in life—and how those different contexts and preferences might be reflected in the content design. In short, we found almost no evidence of empirical testing of many of the field's most foundational ideas.

Affinity Cluster D: Experimentation Desired, Not Heavily Prescriptive Rules

Among his concerns about the further development of Audio Description, a blind assistant director at the Lighthouse for the Blind and Visually Impaired warned of potential attempts at quality controls that could lead to the weaknesses of one-size-fits-all description. Too much prescription, he said, could privilege some viewpoints and create formulaic, uninspired description, rather than embrace the potential Audio Description has for improved artistry and to embody emerging affordances provided by new technologies. He added,

There's no such thing as too long (of a description). I guess that's probably a little bit hyperbolic. I'm sure that there's such a thing as too long. But I just think that one of the things that should be taken advantage of, when you're talking about an audio-described

map, is that you're not gonna bump up against some wall… . You're never gonna run out of room for words. You're never gonna run out of room for audio files. So I don't think (description length) really matters. I don't think that there's such a thing as too long or too short… . There should be standards, but I don't know if one of them should be every audio-described map needs to be within this time range. Not wild about that idea.

As far as maps are concerned, this group of field testers consistently expressed that too much information was better than too little information, and that the Yosemite map description (which was based on the initial best-practices guidelines) helped them to understand what was available and where it was generally located, illustrated by this blind female participant's comment:

It was a lot, but it was good. It was more than good for me because it gave an abundance of information, and it kinda guided me through what I wanted to, you know, I could just pick and choose. If there was something in particular that I wanted to look at or read about, I kinda just opened up things that [were] interesting.

A sighted NPS media designer at Harpers Ferry also addressed issues about making a predetermined length of a map description:

People have so many different ways of understanding information, so when you have one option, as we learned in all of our design practice, everybody has trouble with some element of it. So we try to include as many options as possible, for taking in that information. But I'm wary of saying 'short and sweet,' just because then you have people who are like, 'Well I'm a park map buff, and I want to know all of the information. Why would you limit it to this?' Or people who just have better attention spans.

Affinity Cluster E: Audio Description as a Form of Community Outreach

In our tests of guideline-generated Audio Description, with representative users of such information, several

blind or visually impaired participants said that listening to the map description made them want to visit the park and become more engaged in both that particular place and other attractions throughout America. They were generally impressed by the efforts of these subject matter experts within the National Park Service, who created such detailed descriptions, and, in turn, they wanted to give the descriptions and parks more attention, as a payback of sorts for them being so thoughtful and considerate about their information-gathering needs.

For example, in Yosemite in November 2017, one female blind participant remarked:

You're actually standing in the middle of it, where you could smell it, you could feel it, you know, so it really gives you that visual sensation of everything around you. So obviously we haven't had that before. So I think that's definitely a big positive.

In July 2018, a blind female participant at Cape Cod National Seashore remarked:

It is very important for people to know that it can be very lonely, being alone and not being able to see. All of a sudden, though, through these descriptions, we can see.

A blind male participant, in the same focus group, added,

A lot of us (who can't see), are starving for attention. We want to get out. To do things like this.

Another blind female participant in that focus group then added,

Through (this app), I feel like (my park) is really making an effort to reach out to me.

As more evidence of pent-up demand for this type of accessible experience, the ACB Facebook post about the Yosemite field work shattered the ACB social media channel's record for views, as the first to surpass 100,000 views, setting a new benchmark at about 125,000 views.

In summary, through our mixed-methods approach, we have identified five major paths of

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further scholarly inquiry that would be beneficial to the betterment of Audio Description, particularly of maps. Those are: A). Audio Description, especially in illuminating cartographic forms, needs much more attention. At this point, very little research has been or is being done in this area. More is needed, related to an array of research questions emerging about this topic. B). Audio describers need additional guidance, meaning that not only does more research need to be done, more of this research needs to be designed to be efficiently shared with stakeholders. C). Among these fertile areas, boundary work is wanted and needed in Audio Description. Few boundaries, such as defining key terms and theoretical frameworks, have been established around this subfield, making it difficult to advance research in a collective manner. D). Experimentation is desired. Heavily prescriptive rules are not desired, meaning that much of what is thought about Audio Description today is anecdotal or cultural, not scientifically tested. E). Audio Description is a form of community outreach and can be developed as a binding tissue that brings together people who are blind and visually impaired for shared activities and interpretations. It is not just a description. It is the way in which we see the world.

DISCUSSION

We consider this work as just a beginning to a much bigger and broader discussion in the field of technical communication about the intersection of design and media accessibility with disability studies and, in particular, Audio Description. Despite the breadth and depth of the data generated and explored here—as highlighted clusters—and the progress that represents, this research effort created many questions about the process and possibilities for best practices related to audio describing maps, especially when considering the development of the current guidelines and remaining unaddressed concerns. These fundamental issues under consideration range from foundational concerns, as in, "Do blind and visually impaired people really need (or want) Audio Description of a map?" to particulars of scope (such as, "Does everything on a map need to be audio described, or just the most important elements? And what are those most important elements?") and even genre matters such as, "In what ways is audio describing a map similar to audio describing a photograph or a chart?"

These findings emphasize the importance of first identifying the key elements of the map for a shorter

Table 3. Focus groups facilitated during this round of research

Date	Place	Participants	Protocol
November 2015	Harpers Ferry Center, WV	Six (five male, one female); all brochure designers; all sighted	Focus Group; Table 1 questions; in-person meeting
November 2015	Washington, D.C., at three different national-oriented organizations, the National Library for the Blind, the American Council of the Blind, and the Audio Description Project	Three (two male, one female); all high-level administrators; one male was sighted; the other two are blind	Semi-structured interviews; Table 1 questions; in-person meetings
March 2016	Washington Monument, Washington, DC; Hawaii Volcanoes National Park, on the Big Island of Hawaii; and Golden Gate National Recreation Area, in the San Francisco Bay area of California	Five (four male, one female); all park rangers who collaborated on the Audio Description of the monument's brochure in the pilot study; all sighted	Focus Group; Table 1 and 2 questions; conference call, followed by one-on-one semi-structured interviews via phone

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Table 3 (continued)

September 2016	Throughout the country	Seven (four male, three female); all park rangers who collaborated on the Audio Description of their park brochures in the proof-of-concept phase (Descriptathon 1); all sighted	Focus Group; Table 1 and 2 questions; conference call with the group, followed by one-on-one semi-structured interviews via phone
February 2017	Honolulu, HI	Eight (six female, two male); all members of the Hawaii chapter of the American Council of the Blind; all blind	Focus Group; Table 1 and 2 questions; in-person meeting
August 2017	Lighthouse for the Blind and Visually Impaired in San Francisco, CA	Seven (four female; three male); all members of the Lighthouse's media-design team; two of the males and one of the females were blind	Focus Group; Table 1 and 2 questions; in-person meeting, including two follow-up semi-structured interviews
September 2017	Throughout the country	Seven (four male, three female); all park rangers who collaborated on the Audio Description of their park brochures in Descriptathon 3; all sighted	Focus Group; Table 1 and 2 questions; conference call with the group, followed by one-on-one semi-structured interviews via phone
November 2017	Yosemite National Park, CA	Six (four female, two male); all members of the California Council of the Blind's Fresno chapter (an ACB affiliate), as a representative sample of the 26 people who tested earlier that day the UniD Audio Description content created by the park's subject matter experts; all blind	Focus Group; Table 1 and 2 questions; in-person meeting
April 2018	Muir Woods National Monument, CA	Nine (five male, four female); all members of the California Council of the Blind's Silicon Valley and San Francisco chapters (ACB affiliates), as a representative sample of the 16 people who tested earlier that day the UniD Audio Description content created by the park's subject matter experts; all blind	Focus Group; Table 1 and 2 questions; in-person meeting
July 2018	Morristown National Historical Park, NJ	Three (all female); all blind	Focus Group; Table 1 and 2 questions; in-person meeting
July 2018	Cape Cod National Seashore, MA	Four (two female, two male); all blind	Focus Group; Table 1 and 2 questions; in-person meeting
July 2018	Minute Man National Historical Park, MA	Four (two female, two male); all blind	Focus Group; Table 1 and 2 questions; in-person meeting

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description that will provide the user with general information about the purpose and context of the map. They express the need for guidelines that offer a step-by-step procedure for fully describing the map, with suggestions for such things as how to orientate the user to where features are located on a map and how to methodically describe all of the text on a map. Finally, these findings prompt describers to consider how to create a navigation guide for the longer description that will allow users to easily jump from section to section in order to find the information that is most useful for them.

Although audio describing a printed map seems like a complex process that is best left to the professional, we think it can be possible for the layperson to efficiently and effectively describe a map for blind and visually impaired people through referencing a set of specific (but not too specific) guidelines that lead the describer through a logical progression of steps and provide meaningful examples of what constitutes good description. Training and technical assistance in how to audio describe static material is beneficial. User feedback about the description is also important, with the understanding that different users will have different preferences for elements such as description length, orientation, organization, and style. Using a mixed-methods and multi-layered approach to research and practice, we were able to successfully identify potential boundaries of best practices for the audio description of maps, develop an online academy to train NPS park service personnel how to implement those practices, and support the ultimate production of high-quality, audio-described maps for NPS brochures, ready for public consumption.

Through our work with The UniDescription Project, we have demonstrated that it is possible to audio describe a printed map for blind and visually impaired people so that the content is conveyed in an understandable way and so it is useful to a blind person in many of the same ways that it is useful for a sighted person. The step-by-step process that we developed through our research highlights the importance of the following ideas to consider, as examples of the affinity clusters in action:

- **A short description:** A short description is important for providing an overview of the purpose and general content of a map without overwhelming the user with too much descriptive detail on the front end of the description. As an example of Affinity Cluster A (More Attention Needed), researchers have not yet even addressed how short a short description should be and what it should contain (and leave out).
- **A focus on infrastructure:** The UniDescription Project's website (www.unidescription.org) is both a learning space and a production tool. As an example of Affinity Cluster B (Audio Describers Need Guidance), this site was built to provide both independent online learning, through the UniD Academy, and the backend production system to try out these skills and ideas in real-world situations.
- **The purpose of a map:** Maps serve different purposes, including wayfinding, immersion in historical context, and providing ecological and topographical information. The purpose of a map will affect the ways that the map is used, which also will affect the way the map should be described. As an example of Affinity Cluster C (Boundary Work), theoretical foundations still need to be established, such as the purpose of a map to people who are blind or visually impaired, before too much progress can be made.
- **A long description:** A long description allows blind or visually impaired users to immerse themselves in the map, explore areas of interest, and access the map to the fullest extent possible on par with the sighted user. As an example of Affinity Cluster D (Experimentation Wanted), researchers still do not know how deep or literary these descriptions can go because they typically have not been viewed as a potential audible art form. That is just another way the potential of Audio Description has been unexplored.
- **A navigation guide for the long description:** A navigation guide is essential for an Audio Description that runs for more than a few minutes. The navigation guide allows users to orient themselves to the descriptions and control what they listen to (and for how long). As an example of Affinity Cluster E (Community Outreach), the navigational aspects of Audio Description also offer the potential for increased agency and independence for people who are blind or visually impaired. How might they use that agency to develop novel communities?

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Our research revealed that blind and visually impaired people would like to be able to use audio-described maps to navigate National Parks independently, creating their own trails through the spaces. While Audio Description, on its own, can provide access to information about what is printed on a map, it is difficult for the user to truly orient themselves and navigate using print-oriented Audio Description alone, at least as typically designed. For blind and visually impaired park users, providing an "alternative format" to a map, particularly a wayfinding map, may mean developing a new product from the ground up with blind users in mind. Possibilities for future development include creating an audio-described map that is based on how blind and visually impaired people navigate rather then how sighted people navigate, adapted for blind people, integrating the use of electronic geolocation tools, and using multiple layers of map representation (tactile and auditory in tandem, for example).

As discussed in this paper, each stage of our research further raised questions worthy of empirical inquiry. Persistent questions include: 1) What level of detail is desirable in audio describing a map? The answer is variable, as in, it depends. 2) Should Audio Description of a map focus more heavily on general content, orientation, wayfinding, or some specifically ratioed combination? Maybe different types of digital Audio Description can be offered simultaneously, allowing the user to choose the need to be fitted. 3) What is the best use of an audio described map? Probably the use that gets the most engagement, but we do not even know what that would be. And so on. Further research is needed to develop and test the effectiveness of our best-practices guidelines, both in terms of ease of use for describers and usefulness of the resulting product for users. Additionally, more research is needed to determine the ways that blind and visually impaired people use and access maps, which should impact the development and design of maps for this population.

As we experimented with the ideas raised by the stakeholders, we began to discover common beliefs or themes among the leaders in the community but were unable to fully determine if those were fundamentally cultural, circulated within a particular community of practice, or independently robust, able to withstand empirical scrutiny. This led us to identify both the Affinity Cluster sections of this paper and also many

gaps between and around those clusters. In practicality, those clusters can serve both as magnetized points of interest and beginning boundary objects of a much larger area of study, ripe for exploration and definition.

We learned that high-quality Audio Description does not just emerge from a writer, even one with subject-matter expertise and training in place interpretation, without a significant amount of discussion beforehand about what Audio Description is, as a transmodal-translation process, and what our consultants recommend as best practices. In other words, audio describing is clearly a learned skill that needs significant support and guidance. And we have much to learn. Map descriptions from our pilot Descriptathon, for example, yielded mixed results, predicated primarily on the experiences the subject matter experts previously had with other Audio Description projects. Those with experience provided map descriptions that were more richly detailed and useful; the others, though, wrote basic descriptions, like alt text, and left out much of the map detail. Many were difficult to follow. In post-Descriptathon interviews with the subject matter experts who had described maps, we learned that maps were exceedingly difficult for all of the describers but particularly challenging for those with little experience writing Audio Description. This finding fueled the clear need for a deeper and more thorough emphasis on the development of best-practices guidelines, specifically for maps.

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Jackie Damrau, Editor

Books Reviewed in This Issue

The Global PR Revolution: How Thought Leaders Succeed in the Transformed World of PR

Maxim Behar. 2019. Allworth Press. [ISBN 978-1-62153-715-1, 298 pages, including index. US$29.99 (softcover).]

Up front in *The Global PR Revolution: How Thought Leaders Succeed in the Transformed World of PR*, Maxim Behar claims that public relations (PR) is "the most dynamic, creative, and captivating business in the world" (p. xi). This occurred once social media provided direct access between a business and its customers. No longer does it take a hired PR entity to reach your company's users; no longer do people need to wait on hold for an operator to connect them. The consumer's voice is immediately heard. Brands are no longer solely in the power of the companies. Consumer power over brands is enormous.

Such a momentous change has trickle-down consequences for technical communicators who may not realize that we write for the public eye. If your manual can be directly downloaded in PDF format from a website, then you have become part of a PR solution. The accuracy and usability of your documentation may well determine how a user perceives the business.

As expected, Behar's focus is on the history and changes in PR, concluding with where PR agencies now offer most value. A PR group can be quick to recommend actions to control crises due to press attention, such as results from a catastrophic failure or major faux pas in handling a complaint. Whereas company executives might just wait to see if the issue goes away, PR staff advise this is seldom the case in a social media-rich world. The author claims a bad decision is usually better than no action. Being proactive is wise.

Behar has collected input; including case studies, examples, and insight; from dozens of leading global PR people. This might be a book to suggest to your managers and could inspire communication regarding crisis control. The *Global PR Revolution* is must reading for anyone involved in the ubiquitous PR industry.

Specific places where technical communicators can add their expertise to PR is monitoring written responses going out on blogs and on Facebook pages. Make sure that proper grammar and spelling are being used. Don't be surprised at what you see since social media conversations are started by an army of amateurs whose spell checker likely has run amok. We should add value wherever we can, including a fact check to make sure that our replies are transparently honest.

Don't expect this PR revolution to simply fade away. However, we can be the one(s) in our company encouraging the need for being proactive. And shouldn't the care of a company's social media presence be automatically considered as at least part of the technical communicators' bailiwick?

Donna Ford

Donna Ford has been an STC member and a technical writer in the hardware, software, and government healthcare industries. She holds an Information Design certificate from Bentley College. Donna is an author who also reviews books online for the US Review of Books.

In Other Words: An Illustrated Miscellany of the World's Most Intriguing Words and Phrases

Christopher J. Moore. 2019. Bloomsbury Publishing. [ISBN 978-1-63557-403-6. 128 pages. US$18.00.]
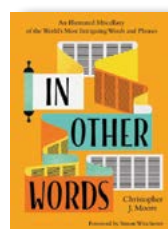
Every language has its idiosyncrasies that makes it just a tiny bit more difficult to understand if you are not a native speaker. Is that because some people experience *schadenfreude* when witnessing others garble common sayings? Perhaps it is a universal *weltschmertz* (world pain)? Or maybe just a need to create a book that explains colloquialisms from across the globe so you can use them in everyday conversation. So, *Bob's your uncle*, Christopher Moore created *In Other Words: An Illustrated Miscellany of the World's Most Intriguing Words and Phrases* to fill that gap.

This book contains dozens of phrases from multiple cultures, spanning ancient Greece to modern Japan. Moore has grouped these phrases, along with their accompanying translations and explanations by time and region, for example, *the ancient word* or *the far north*. A handy pronunciation guide is located at the start, and each cultural phrase has a phonetic pronunciation included. Often, the direct translation of the word or phrase means little in English, such as *cavoli riscaldati* (Italian for "reheated cabbage"), so Moore explains the true meaning of the colloquialisms.

In the case of *cavoli riscaldati*, it stems from a longer proverb about a pointless attempt to revive a former love affair. Additionally, most entries are supplemented by a wonderful illustration by Lan Truong which further adds flavor to the piece. Together, Moore's clever writing and the beautiful illustrations make for a delightful book. The intended audience must be Americans, since the one culture that is not investigated is that of American jargon. This absence is barely noticed as you page through the book absorbing multicultural sayings.

Perhaps joining a *kōhanga reo* (Maori for "language nest," where children are taught almost-dead languages) will help you boost your foreign vocabulary. Or, consider building up your *guanxi* by giving this book as a gift for your favorite lexophile. Could owning *In Other Words* turn you into a word worm yourself? *By hook or by crook*, it will!

Timothy Esposito

Timothy Esposito is an STC Fellow with over 20 years of technical communication experience. He is the past president of the STC Philadelphia Metro Chapter. Before becoming president, Timothy was chapter vice president, treasurer, webmaster, and scholarship manager.

Leadership Intelligence: The 5Qs for Thriving as a Leader

Ali Qassim Jawad and Andrew Kakabadse. 2019. Bloomsbury Business. [ISBN 978-1-4729-6393-2. 202 pages, including index. US$28.00 (softcover).]
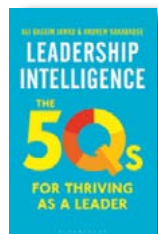
Leadership Intelligence: The 5Qs for Thriving as a Leader tackles its topic as it relates to the corporate world today. Ali Qassim Jawad and Andrew Kakabadse assert that what works today in the corporate world includes "nimble minds" and "rounded perspectives" when it comes to leadership and solving problems. They have done research concerning effective leadership in the corporate world, noting five key leadership intelligences and their corresponding quotient (Q):

- IQ: Cognitive intelligence
- EQ: Emotional intelligence
- MQ: Moral intelligence
- PQ: Political intelligence

- RQ: Resilience intelligence

As an example, a definition for EQ is the ability to manage your own emotions and those of others. PQ relates to a process of discussion to reach agreement, harmony, and a way forward.

The audience here could be anyone in a leadership position including the executive or board levels. Jawad and Kakabadse tested the 5Qs on leaders worldwide.

They concluded the 5Qs contribute to becoming a well-rounded, effective leader for any situation. The authors also note that individuals can nurture and practice the 5Qs through learning and development, as well as relate to four levels of leadership: operational, general management, executive management, and board level. For example, Jawad and Kakabadse state, "Those who take charge handle differences and tensions, which after a while can wear you down" (p. xiii).

The ideas and information the authors present in *Leadership Intelligence* are worthwhile, thoughtful, and useful.

Jeanette Evans

Jeanette Evans holds an MS in technical communication management from Mercer University. She has worked with groups such as Philips Medical and Cuyahoga Community College doing technical writing and supporting courseware development. Jeanette also co-authored an *Intercom* column on emerging technologies in education and is currently a NEO STC newsletter co-editor.

Microlearning: Short and Sweet

Karl M. Kapp and Robyn A. Defelice. ATD Press. [ISBN 978-1-949036-73-2. 200 pages, including index. US$24.99 (softcover).]

Microlearning: Short and Sweet considers many definitions for microlearning—what it is and what it isn't—and attempts to converge that information into this compact book. It was written to demystify microlearning, offer learning theories and research that support microlearning, and present an actionable road map.

Spoiler alert! The definition used in this book is, "Microlearning is an instructional unit that provides a short engagement in an activity intentionally designed to elicit a specific outcome from the participant" (p. 11).

Chapters 1 through 4 cover the foundations of microlearning. Chapters 5 through 8 cover planning and development.

Chapter 2 focuses on the principles of learning theories and domains. Each learning theory (behaviorism, cognitivism, constructivism, and connectivism) represents an opportunity to use microlearning with examples of how each theory supports it. The chapter also shows how different types of learning outcomes tap a different learning domain (cognitive, affective, and psychomotor).

In Chapter 3, Kapp and Defelice present six use cases to help you identify opportunities for microlearning: pensive, performance, persuasive, post-instruction, practice, and preparatory. For example, pensive microlearning asks your audience to reflect upon an idea, while practice microlearning helps to hone a skill. You'll even find a worksheet in this chapter that helps you determine the most appropriate use case for your situation.

Chapter 4 explains how to incorporate a use case and put microlearning into action. This chapter also provides scientific evidence for using microlearning to deliver instruction. This book will help you visualize the practices that will work best for you, provided you have an idea of what you want to communicate.

Chapter 5 gets you thinking about a microlearning strategy, including developing an overall goal for the learning initiative, identifying performance indicators, building the use case, and creating an audience profile.

Chapter 6 emphasizes the importance of—and the factors influencing—planning and implementation. It takes you through pre-production, production, and post-production considerations.

Chapter 7 is all about designing microlearning and highlights writing concisely, creating questions that are precise and objective, and selecting graphics and visuals that add value (besides podcasting, video, and gamification).

Chapter 8 discusses why measurement and evaluation matters and employs the who, what, when, where, why, and how questions. You'll also learn to use the SWOT (strengths, weaknesses, opportunities, and threats) analysis to evaluate the team that developed the microlearning.

While microlearning needs as much attention as any other form of training, don't be discouraged! *Microlearning* is an easy read that gets you focused.

Whether a novice or a pro, you can pick and choose what you need to create microlearning.

Michelle Gardner

Michelle Gardner, CPTC, is an STC member and a technical writer for Harris Computer. She has a bachelor's in Journalism: Public Relations from California State University, Long Beach, and a master's in Computer Resources and Information Management from Webster University.

Beyond Human Error: Taxonomies and Safety Science

Brendan Wallace and Alastair Ross. 2019. CRC Press. [ISBN 978-0-367-39103-4. 288 pages, including index. US$74.95 (softcover).]
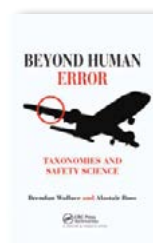
Beyond Human Error: Taxonomies and Safety Science breaks down traditional notions of human error and provides practical advice for evaluating accidents and preventing disasters. Although the paperback edition was released in late 2019, there are no revisions from the 2006 hardcover edition.

Despite its age, this book may appeal to several types of technical communicators: those working deeply in user-centered design or human factors, those who would like to further develop their content strategy skills, and those involved in risk communication.

The connection to those working primarily in risk communication is most obvious. The authors present relevant anecdotes of safety science research from the rail and nuclear energy industries. They argue that people are not computers into which safety rules can be downloaded. Instead, people must interpret the rules, and those interpretations vary by person and by context. The authors recommend a case-based approach that is developed from the lower rungs of an organization rather than from the top down.

For those practitioners and scholars of user-centered design, the authors summarize the contributions of psychology and human factors theory in preventing disasters, while also challenging the value of rules-based, cognitivist approaches to safety science. Those who are familiar with Paul Dombrowski's analyses of the groupthink and communication failures in the Challenger disaster will relish this volume's detailed discussion on the design and testing failures amid the

familiar organizational and political pressures that led to the tragic explosion of the space shuttle.

Finally, for those who work in the areas of content strategy, the authors provide advice on and examples of developing and testing a valid and reliable taxonomy. In this case, the authors examine the methods used to evaluate and refine safety report taxonomies by testing report writers' ability to use the same terms. They describe these studies in enough detail that a content strategist could replicate the studies' methods to determine the confidence in a taxonomy among a team of writers. Content strategists might appreciate the perspective of a different field.

The book's overall tone feels academic. This isn't to say that scholars and practitioners will be hard pressed to find practical nuggets of advice or that the language is turgid. Rather, the book's subject traverses engineering, psychology, research methods, and philosophy, which requires the reader to wade through lengthy passages on topics that seem tangential to their primary interests. While *Beyond Human Error* covers a lot of ground, each chapter seems to stand on its own, and the final chapter brings together all pieces. Readers from different audiences could simply limit themselves to the chapters that interest them most and still extract useful information. On balance, I found the book readable, highlighted by accessible discussions on hermeneutics (the theory of interpretation) and psychology. For the technical communication practitioners I noted earlier, this book is worth the investment in time.

Michael Opsteegh

Michael Opsteegh is an STC Senior Member and a technical writer in the software and financial services industries since 2004. He is a lecturer in the technical communication program at Cal State Long Beach. Michael holds a master's degree in English and is a Certified Technical Professional Communicator (CPTC).

Writing About Screen Media
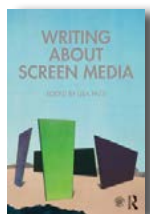
Lisa Patti's edited volume aims to give students the basic knowledge and strategies to write about screen media of several types, including film, social media, video games, and music videos.

The effort is ambitious and laudable, even if the result isn't perfect.

She divides her book into two parts. The consistently excellent first part, "New Frameworks for Writing About Screen Media," consists of five chapters written entirely by the editor. Each chapter follows the pattern of main text followed by ingenious practical tips and resources.

These chapters give useful and often totally original advice. Patti details, for example, how she teaches students to use a process of Collaborate—Frame—Curate—Follow (up). Nicely chosen images from selected films reinforce the full details of how to analyze what you're seeing and hearing, develop your "critical argument," and take advantage of digital tools.

The second part of the book consists of pieces written by 51 contributors, averaging five pages in length. Each chapter includes a boxed summary, main text, and references. The quality here varies widely: Some contributions are gems that instructors will find excellent for classroom use, while a few probably should have been left out of the collection.

One of the stronger chapters is TreaAndrea M. Russworm and Jennifer Malkowski's "Playing to Write: Analyzing Video Games." Especially interesting is their original take on how to get difficult-to-find games. Also very strong is Derek Johnson's expert details on how "media scholars can transform lists of media *franchises* into more critical assessments of the *franchising* processes through which agency and constraint unfold within and across entertainment industries" (p. 177). Other authors go into such writing opportunities as film festivals, Andy Warhol's cinema, archival footage, music videos, transnational media, outdoor advertising, streaming portals, interviewing, academic blogging, video essays, and blurbs. All in all, you get a veritable smorgasbord of topics.

I'd make three recommendations for strengthening the collection. First, Patti's contributors are all faculty members or students. She should get on board professional, nonacademic writers who are heavily engaged on social media and would have much to say.

Second, an editor should not expect readers to check the ends of all the chapters to compile a list of resources—they need an overall bibliography, particularly if Patti is gearing her book toward student researchers.

Finally, the book needs an index. The staggering count of 41 non-indexed chapters makes it impossible to pursue themes and names.

If you want to consider wide-ranging opportunities for writing about screen media, Lisa Patti's entertaining volume can be a good place to start.

Avon J. Murphy
Avon J. Murphy is an STC Fellow and technical editor in western Washington. A retired college professor and government writer, he is a contractor and principal in Murphy Editing and Writing Services, specializing in computer and Web technologies. Avon served as book review editor for *Technical Communication* for 17 years.

Writing Science in the Twenty-First Century
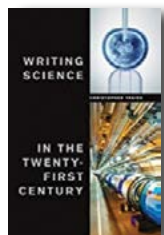
Because science communication is increasingly important, the Alan Alda Center for Communicating Science and other similar centers have come about to help scientists share their work with lay audiences. Publishers of academic textbooks have also increased their offerings in this area. Canadian publisher Broadview Press joins the market with a nicely produced textbook on writing in STEM fields.

Writing Science in the Twenty-First Century targets two primary courses: undergraduate writing courses for STEM students and STEM content courses with a writing component (often called writing in the majors or disciplines). Although the book isn't written for first-year composition and isn't an introduction to academic writing, the book could certainly augment such courses, particularly at universities, colleges, or technology trade schools focused on STEM education.

Although advertised as a text for research writers and those doing science journalism or science blogging, other texts better focus on the details of writing for these specialized genres. This text is best for general courses where less depth and detail are required. For example, the two-page section on "Numbers and mathematical symbols" lacks examples of how to include math into writing. I've found math inclusion to be a confusing task for students but one that is straightforward to explain, particularly with examples. The section instead provides general purposes for including math in various genres depending on audience needs (p. 64).

Christopher Thaiss writes with a friendly and conversational voice, addressing students directly: "Let's look at this article from the online *New York Times* to see how voice works in a piece of STEM journalism" (p. 200). The explanations are approachable, and the text effectively uses bullets, bold text, headings, and so on to convey content. Chapters are structured consistently, with an introduction to the topics, the chapter goals, exercises throughout, and a conclusion.

This textbook covers the requisite content, like multimodal writing, ethics, and oral presentations. Three chapters focus on academic journal articles and research reviews. Two discuss non-academic genres: STEM journalism and science blogs. These are all solid introductions to the material. While this is a full-color book with a clean page design, it could have included more graphical material throughout; most graphics appeared in either the chapter on posters and infographics or the one on multimodal writing. The chapters on style and editing sentences use text highlighting, for example of subject-predicate pairs, to illustrate important concepts.

Broadview Press also offers websites with additional content. The *Instructor's Guide* is a brief PDF text addressing the two types of courses mentioned previously. The strength of this guide is the section, "Best Practices in Using Student Writing in Your Teaching," and the entire text is particularly good for STEM instructors and teaching assistants who may not be familiar with typical university resources like the writing center or a WAC director. The website provides chapter quizzes and outlines, and a sample syllabus for an upper-division writing course, complete with sample assignments.

Kelly A. Harrison
Kelly A. Harrison, MFA, teaches technical writing at Stanford University. In collaboration with a colleague, she recently received an NEH grant for curriculum development at San José State University, where she has taught a range of writing courses. She has written print and online content for various high-tech companies.

Transforming Organizations: Engaging the 4Cs for Powerful Organizational Learning and Change

Michael Anderson and Miranda Jefferson. 2019. Bloomsbury Publishing Plc. [ISBN 978-1-4729-4931-8. 258 pages, including index. US$35.00.]

What is refreshing about Michael Anderson and Miranda Jefferson writing about *Transforming Organizations: Engaging the 4Cs for powerful organizational learning and change* is the ultimate dose of reality they provide. This is no fairy tale story. True transformation is a long-range endeavor that is difficult, problematic, and requires a level of effort not necessarily understood by organizations trying to engage in these seismic change attempts. The level of frankness is refreshing. Even though organizations are in a constant state of change, they must almost stop during said change to accomplish transformation. Anderson and Jefferson advocate for the formation of a dedicated transformation team with absolute commitment and engagement from leadership. Transformation is, as they say, not a one-day workshop.

In case readers have forgotten the 4Cs—critical reflection, creativity, communication, and collaboration—the authors spend time in Chapter 1 defining and discussing the terms. Although readers can expect to see the usual case study examples that have become the norm in business books, the examples do not overwhelm the how-to advice contained within. Specifically, the questions included at the conclusion of Chapters 3 through 8 are useful and immediately applicable to both new and existing transformation plans. In Chapter 3, a short case study example about an educational organization highlights the problems that arise when leaders are not engaged in transformation within their own organizations.

The ideas in *Transforming Organizations* can be applied whether readers are engaged in waterfall or agile methodologies. They can also be applied to determine if an organization is ready for transformation, which the authors note is often not the case. If readers are looking for ways to assess readiness, this book can help. There are also elements of knowledge management found in Chapter 6 when discussing critical reflection. This book will appeal to a broad spectrum of roles across organizations including executive leadership, human resources, change managers, knowledge managers, and training managers.

Anderson and Jefferson try to introduce a new term, *coherence makers*, for what readers will understand to be frameworks and guides. While understanding the meaning of the term and its intent, sticking with something more familiar allows for quicker cognitive understanding for the reader. Some of the included images are difficult to read or do not add value to the text.

Readers short on time should read the Introduction, which includes a helpful summary of each Chapter, and then go straight to Chapter 9. The authors reiterate that transforming organizations is a complex act fraught with problems. They emphasize the need for broad leadership and employee engagement. They provide critical questions that can be taken right from the page into a meeting. They enable readers to identify where (awakening, applying, accelerating, advance, adept) in a continuum they and the organization reside in terms of transformation. Finally, they never lose that dose of realism while showing readers transformation is possible.

Liz Herman

Liz Herman, PhD, is a knowledge management practitioner and is certified in project management and technical communication. She is an STC senior member currently serving as the Technical Communication Book of Knowledge Committee Chair. She works for Senture as its Director of Knowledge Management.

Conducting Your Literature Review: Concise Guides to Conducting Behavioral, Health, and Social Science Research

Susanne Hempel. 2020. American Psychological Association. [ISBN 978-1-4338-3092-1. 146 pages, including index. US$29.99 (softcover).]

Literature reviews provide a sound overall understanding of a topic within a field of study and provide the context for subsequent research. Reading the most important publications in a field creates a gestalt that informs a research design and helps researchers provide the context readers need to understand the importance and relevance of new research. As a research aid during preparation for a research project, literature reviews clarify what's been done before, what worked, what didn't work, what knowledge gaps exist, and what must be done to fill those gaps.

In *Conducting Your Literature Review: Concise Guides to Conducting Behavioral, Health, and Social Science Research*, Susanne Hempel demystifies the forbidding task of performing a literature review by providing a concise, powerful set of guidelines in a highly logical sequence. She begins with the crucial task of defining the scope and methods for your review, including a review of the main ways to find published information, and continues with descriptions of what to do with the information once you find it. Hempel focuses on psychological research, from the perspective of undergraduate and graduate students, but her advice is robust and will benefit working researchers in any field.

Hempel emphasizes the trinity of technical communication: audience, goal, and information. The book's overall approach matches her recommended process to the goals of the literature review, keeping in mind the review's audience, and she frequently reminds us that the review process must be as rigorous as the research it supports to avoid "selection" bias (overemphasizing or neglecting subsets of a field of research) and "reporting" bias (producing an unbalanced or inconsistent summary). Each chapter ends with a summary checklist that emphasizes the key points and contains multiple examples to make abstract points concrete.

The advice is consistently rigorous and logical, though I had some quibbles. For example, Hempel notes that the most commonly cited papers in a field are a valuable resource, but there's a risk that papers on a given subject by early authors lead to citations by subsequent authors only because those papers have already been cited (what I call the "bandwagon" effect), not because of the research's inherent value. Omissions include the lack of an explicit warning to not base one's summary of a paper on its Abstract, and no mention of the importance of backups. (Literature reviews represent a large investment of time, and you don't want to lose that investment to a computer glitch.) Ironically, there are few literature citations, although there are many useful website references. Finally, a concluding chapter that puts everything together within an ethical context would have been nice.

Quibbles notwithstanding, I strongly recommend this small gem of a book to anyone who needs to learn how to harvest the immense garden of modern knowledge to find the most nutritious morsels.

Geoff Hart
Geoff Hart is an STC Fellow and author of the book *Writing for Science Journals: tips, tricks, and a learning plan.*

Speaking of Writing: A Brief Rhetoric

In *Speaking of Writing: A Brief Rhetoric*, Allegra Goodman and Michael Prince provide an indispensable, engaging guide to basic rhetorical concepts and how to write well. Through a creative structure and engaging prose, they make dry and difficult-to-parse concepts come to life, allowing readers to discover what makes writing work and not work in chapters that mimic the process of learning when guided by cogent, thoughtful instructors.

What makes this book so engaging is how the information is presented. Each of the ten chapters introduces a concept and an example writing assignment that illustrates the concept that four student "characters" with distinct interests and personalities work through. The characters struggle through common missteps in the writing process to ultimately become more proficient in the chapter's main concept and writing assignment genre. Goodman and Prince balance the voices of the characters with their own authorial voices, guiding the readers through the key concepts in clear, concise prose. At the end of each chapter, there are activities and "microreadings" for the reader to read, analyze, and work through. The microreadings are particularly interesting, as Goodman and Prince provide selections from diverse authors and speakers to exemplify the chapters' concepts and genres, from fiction writer Neil Gaiman to pro football player Ray Lewis.

"Chapter 1: What You Bring/What You Can Expect" introduces readers to the book, writing a literacy narrative, and how to develop a writing process. "Chapter 2: Rhetoric and the Rhetorical Situation" provides readers with a primer for essential rhetorical concepts such as ethos, pathos, logos, kairos, audience, and genre. "Chapter 3: From Reading to Writing about Texts" walks readers through how to analyze texts, take notes, annotate, summarize, and paraphrase. "Chapter 4: From Reading to Writing about Images" shows readers how the methods of rhetorical analysis and persuasion discussed

previously can be applied to visual media. "Chapter 5: Building an Argument: Claims and Support" discusses how to create claims and arguments and support them with evidence. "Chapter 6: Academic Arguments: Thesis and Organization" distinguishes the differences between thesis statements and topics. "Chapter 7: Draft and Revision" illustrates the complex process of improving a draft. "Chapter 8: Responding to Other Voices/Other Sources" instructs readers how to use citations correctly. "Chapter 9: Writing and Research" teaches how to use the skills from previous chapters to create longer research papers. "Chapter 10: Voice and Style" discusses the differences between voice and style and how they can be adapted for different audiences.

The concepts in *Speaking of Writing* may be too basic for seasoned technical communicators, but readers looking for an introduction to or a primer on essential writing and rhetorical concepts will be hard-pressed to find another textbook as fun, educational, and interesting.

Dylan Schrader

Dylan Schrader is a proposal developer at the University of Alabama in Huntsville, where he also earned an MA in Professional Communication.

Social Media and the Public Interest: Media Regulation in the Disinformation Age

Philip M. Napoli. 2019. Columbia University Press. [ISBN 978-0-231-18454-0. 282 pages, including index. US$35.00.]

Despite the benefits they were meant to bring, social media platforms have become powerful disinformation channels that threaten the orderly functioning of democratic institutions. While many have come to view the situation with alarm and demanded that "something" be done, few have undertaken the careful analysis needed to begin to get a handle on the problem.

In *Social Media and the Public Interest: Media Regulation in the Disinformation Age*, Philip Napoli focuses on the dominant role social media plays in the curation, distribution, and consumption of news and information, and systematically develops the

ideas needed to create a media governance framework appropriate to social media platforms.

Napoli examines the arguments the platforms use to dodge accountability for the often-toxic environment they have enabled and finds them wanting. "We are 'Tech' companies, not media companies," fails on many grounds, including reliance on the traditional media business model—selling access to their audience to advertisers. The First Amendment argument—the remedy for bad speech is counter speech—also fails. To be effective, counter speech must be timely, reach the original audience, and come from a known source— none of which holds in the social media environment.

Napoli reviews the history of media governance— the system of norms and regulations that have evolved to keep journalism fair, honest, and able to meet its obligations to provide the public with the factual information needed for informed decision making. He carefully reviews the frameworks (and legal rationales) that have governed earlier platforms—print, broadcast, cable—and considers their applicability to social platforms. In the end, he suggests, any governance framework will probably require a combination of self-governance and outside regulatory interventions.

While the platforms need better governance, Napoli argues, social attitudes need to be addressed as well. In recent years, the concept of the public interest has shriveled into the sum of individual wants and needs to be reinvigorated to again include what benefits society. We also need to throw off the attitude that "everyone is a journalist now," he argues, and again learn to respect professional expertise and practice.

In the end, Napoli reminds us, social media is not synonymous with the Internet, opening the possibility of a regulatory framework that applies to social media but not to the Internet as a whole—avoiding Internet censorship, but denying information the weaponization social media affords. Finally, he suggests, that if actions taken to tame social media cause us to rely on it less, as a society we would probably be better off.

Making the social media platforms serve the greater good is a thorny problem, fraught with complexity. With *Social Media and the Public Interest,* Napoli has laid out the essential issues and arguments with the precision of a well-written legal brief. Those serious about the problem couldn't wish for a more thorough briefing.

Patrick Lufkin

Patrick Lufkin is an STC Fellow with experience in computer documentation, newsletter production, and public relations. He reads widely in science, history, and current affairs, as well as on writing and editing. He chairs the Gordon Scholarship for technical communication and co-chairs the Northern California technical communication competition.

The Emoji Revolution: How Technology Is Shaping the Future of Communication

Philip Seargeant. 2019. Cambridge University Press. [ISBN: 978-1-108-72179-0. 238 pages, including index. US$17.99 (softcover).]
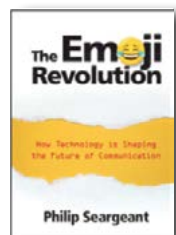
How much fun can it be to read a book about emoji? I wanted to find out when I picked *The Emoji Revolution: How Technology Is Shaping the Future of Communication* to read and review. I was not disappointed as what I found in *The Emoji Revolution* met my expectations. There is an element of fun and lightness throughout the narrative. However, the topic's overall treatment is serious and scholarly, so we find a mix of serious and fun, and a bit of the best of both worlds.

Can author Philip Seargeant really convince us that emoji are "in the front line of a revolution in the way we communicate" and communicating with emoji provides an example of "ingenuity and creativity in the heart of human interaction" (as stated on the back cover of *The Emoji Revolution*)? The answer in my view would be "yes" as emoji let us communicate far and wide with graphics as well as the written word though, of course, what we communicate with emoji is limited. In addition, emoji are indeed ingenious and creative as well as being fun and helpful. I keep thinking of the idea that a picture can be worth a thousand words. And, ok, now I could add an emoji ☺ to show you how I feel about what I just said.

One of the many topics Seargeant covers in *The Emoji Revolution* includes addressing the question of creativity and language. He states that "language is one of the most salient ways in which we can express our creativity" (p. 152). He tackles the topic of creativity by explaining various definitions for this term and explains how emoji add a creative element to expressing ourselves in written language.

Seargeant argues that the use of emoji on the phones or other devices we use so much shows us how technology is becoming part of our everyday lives. But are these emoji "ushering in a new era of empathy and emotional engagement on the internet" (again as stated on the somewhat "sensationalistic" back cover of *The Emoji Revolution*)? That may be a stretch but, then again, we can always hope.

Jeanette Evans

Linda M. Davis is an independent communications practitioner in the Los Angeles area. She holds an MA in Communication Management and has specialized in strategic communication planning, publication management, writing, and editing for more than 25 years.

The Complete Project Manager: Integrating People, Organization, and Technical Skills

Randall L. Englund and Alfonso Bucero. 2019. 2nd ed. Berrett-Koehler Publishers, Inc. [ISBN 978-1-5230-9840-8. 336 pages, including index. US$69.95 (softcover).]
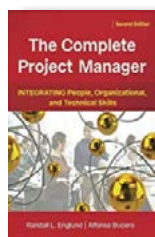
Randall L. Englund and Alfonso Bucero's *The Complete Project Manager: Integrating People, Organization, and Technical Skills* targets professional project managers looking to improve their performance and project success rates. However, many skills described would benefit technical communicators who are often expected to perform a similar role.

The authors argue that a successful project manager must integrate three types of skills: domain expertise, business skills, and leadership (p. 5). They break these into twelve discrete categories, from leadership and management skills to negotiating, sales, and conflict management skills. Each skill has a designated chapter; readers can skip around to dive more deeply into skills they want to improve.

Chapter 2, "Personal Skills," is useful for those thrust into a project manager role without a business background. The authors emphasize having a positive attitude and being assertive in decision making; often people underestimate how much decision-making authority they have. "Push the envelope and go beyond what you believe is your authority level to make decisions," they write. "Make your intentions clear through transparency, demonstrating willingness

to engage, and being proactive" (p. 57). Besides interpersonal attitudes, they outline specific actionable guidelines for networking: being an active volunteer in organizations, exchanging references, treating each person you meet as important (and a potential opportunity), and following up regularly to keep relationships active.

Another section applicable to any workplace is "Conflict Management" (Chapter 5). The primary sources of conflict are "resources" (getting the right people and tools for the job), "objectives" (differences in opinion about project goals), and "identity" (personal beliefs or historical precedence) (p. 128). Project managers should foster an "open environment where people bring up problems early and everyone engages in brainstorming or collective reasoning to determine a range of options" (p. 131). When disagreements persist, try reframing the conflict from each participant's point of view to get team members to see things in a different way.

The Complete Project Manager is content-heavy and would serve as a useful textbook for a related course. For an independent learner, the chapters are self-contained to let you pick and choose, and each has a succinct summary to reinforce key points. Some case studies are more helpful than others; consistent placement and formatting would improve the usefulness of these real-life business examples. The book also contains a lot of overly complicated diagrams and flowcharts that add bulk but don't simplify information.

Overall, I would recommend this book to professionals who want to hone specific project management skills.

Bonnie Winstel
Bonnie J. Shamp Winstel is an STC member and a technical writer for a small software company in Huntsville, Alabama. She received her master's degree in English and Technical Communication at the University of Alabama-Huntsville in May 2013.

Publication Manual of the American Psychological Association: The Official Guide to APA Style

American Psychological Association. 2020. 7th ed. American Psychological Association. [ISBN 978-1-4338-3216-1. 428 pages, including index. US$31.99 (softcover).]

It's been a decade since the 6th edition of the *Publication Manual of the American Psychological Association* appeared, and at last we now have the seventh edition. Like most publishers and organizations that base their house style on APA guidelines, *Technical Communication* is working toward the transition, which APA originally hoped would be complete for all users by mid-2020.

You'll find hundreds of changes large and small between the sixth edition (*APA* 6) and the seventh (*APA* 7). The first thing you may notice is that *APA* 7 contains 155 more pages in total, and the nicely written index is twice as large. The editorial staff also introduce more graphical detail, printing almost twice as many tables and figures. In addition, the font is noticeably smaller (a major difficulty for me as my eyes are near 80 years of use). This means that much more material has been packed into the volume.

One of the two most significant additions in content is the new chapter devoted to Journal Article Reporting Standards (JARS). APA developed these standards and first reported on their full systemization in 2018. Here's why you should know about JARS: "These standards provide guidelines for authors on what information should be included, at minimum, in journal articles. By using JARS, authors can make their research clearer, more accurate, and more transparent for readers" (p. 71). The editors introduce reporting standards across research designs, for quantitative research, for qualitative research, and for mixed methods research. Once you've read this introductory chapter, you can find deeper material at https:/apastyle. apa.org/jars.

Also significant is the new chapter "Bias-Free Language Guidelines." APA is to be congratulated for its greatly expanded discussion and numerous examples of avoiding bias in such areas as age, disability, gender and sexual orientation, race and ethnicity, and socioeconomic status. Even if you never use APA in your work, you should read this chapter.

Changes figure prominently in APA recommendations concerning references and citations. Of particular note: (1) When doing an in-text citation of a work with multiple authors, name only the first author, and then write "et al."; (2) in your reference list, however, include up to the first 20 authors; and (3) don't include publishers' locations in references.

APA makes some interesting new recommendations about writing mechanics as well. A huge cry went up when *APA* 6 favored two spaces following terminal punctuation of sentences in manuscripts; that misstep has disappeared. Besides Times New Roman 12 point, APA now approves of Calibri 11 point, Arial 11 point, Lucida Sans Unicode 10 point, and Georgia 11 point. Gone are the details on shading cells within tables, replaced by the admonition not to use shading at all. Finally, you're now encouraged to use the singular *they* wherever possible.

The editors strongly recommend that we continue to take advantage of their online resources, at https://apastyle.apa.org/. Like the book, the website provides huge quantities of information, enriched here by expansions upon topics, updates, cross-references to the manual, links to outside resources, a lively blog, tutorials, and responses to users' feedback. Chelsea Lee, APA blog monitor, in early 2020 pointed to a most welcome feature: "The style and grammar guidelines pages will show whether content is new, revised, expanded, or the same as the sixth edition."

The APA editorial staff and contributors have given us yet one more excellent tool for preparing journal manuscripts according to APA style. As a technical communicator, you can learn a good deal by looking closely at their revised guidelines.

Avon J. Murphy

Avon J. Murphy is an STC Fellow and technical editor in western Washington. A retired college professor and government writer, he is a contractor and principal in Murphy Editing and Writing Services, specializing in computer and Web technologies. Avon served as book review editor for *Technical Communication* for 17 years.

The Mad Scientist's Guide to Composition (A Somewhat Cheeky but Exceedingly Useful Introduction to Academic Writing)

The *Mad Scientist's Guide to Composition (A Somewhat Cheeky but Exceedingly Useful Introduction to Academic Writing)* is probably the most high-spirited book we are ever likely to review in these pages. Aimed at college freshmen struggling with the daunting process of learning to write the kind of expository prose that will be required in their college papers, Weinstock harnesses the trope of the mad scientist creating an experimental monster. With cocky humor, he invites students to treat their essays as experiments where they can unleash their creativity and try different things until it all comes to life. Milking the trope, research becomes "grave robbing," planning becomes "readying the lab," writing drafts becomes "conducting experiments," and so on. And to top it off, the text is replete with monster movie stills, and tongue-in-cheek asides—"Do *not* read Latin incantations aloud unless you know exactly what they mean!" (p. 226).

But don't be fooled; the merriment serves a serious purpose, keeping its intended readers engaged with a subject—writing papers—many of them dread.

Weinstock has an excellent grasp of the challenges novice writers face—lack of ideas, shaky skills, fear of failure—and using a friendly, casual tone, he tells them what they need to know. He deftly covers all the nuts-and-bolts mechanics—sentence structure, citing sources, formulating arguments, warnings about plagiarism ("don't anger the dead")—that one would expect to find in any composition handbook. What makes this guide special, aside from the humor, is the emphasis it places on treating crafting an essay as an experimental adventure, where initial missteps are to be expected and totally okay.

Weinstock stresses that a good essay (and an A grade) is usually the result of post first draft work that too often gets neglected. He covers retroactive outlining where one rearranges thoughts and blocks of text found in early drafts to improve organization and clarity. He also urges students to engage in cooperative peer reviewing— he covers both how to review and how to respond to

comments—a valuable real-world composition tool many won't encounter until grad school.

Inviting students to learn by example, he draws on academic essays about the role of monsters in popular culture, both from academic journals and from exemplary student work, many of which are annotated to show points made in the text. "Now-it's-your-turn" exercises invite students to practice what they have just been told.

If I had had this when I was doing my undergraduate work, it would have saved me a lot of learning time. And, I suspect, many a graduate student, and not a few working technical writers, would benefit from what is found here as well. Considering that this is a composition handbook, Weinstock has performed a miracle: He has brought the dead to life and produced a handbook that students might not only read but heed.

Patrick Lufkin

Patrick Lufkin is an STC Fellow with experience in computer documentation, newsletter production, and public relations. He reads widely in science, history, and current affairs, as well as on writing and editing. He chairs the Gordon Scholarship for technical communication and co-chairs the Northern California technical communication competition.

Theories of Human Learning: Mrs. Gribbin's Cat

Guy R. Lefrançois. 2020. 7th ed. Cambridge University Press. [ISBN 978-1-108-73599-5. 548 pages, including index. US$57.99 (softcover).]
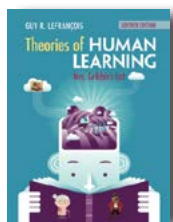
Planning to teach a course on learning theories, or simply want to learn more about them since you never formally studied instructional design? *Theories of Human Learning: Mrs. Gribbin's Cat* offers a wealth of information about learning. Divided in five parts, this textbook gives a thorough historical overview of learning theories, from early behaviorism to modern cognitivism and artificial intelligence. The last part of the textbook provides a comprehensive summary and supplementary materials, including glossary, references list, and indices to research items by person's name or subject.

What initially drew me to the book? Mrs. Gribbin and her cat, Schrödinger. Lefrançois begins each chapter with the tale of Mrs. Gribbin dictating the textbook to

the author as Schrödinger accompanies them. After the story ends, Lefrançois continues using Mrs. Gribbin's voice to deliver the chapter objectives in a fun manner. The footnotes sprinkled throughout the textbook enrich Mrs. Gribbin's story by providing additional food for thought. For example, a footnote in Chapter 7 shows Mrs. Gribbin connecting Bruner's categorization theory with Hebb's theory (p. 249). This running narrative makes this textbook both captivating and informational.

This well-organized textbook also helps readers find the information they need. Each chapter begins with a detailed outline, followed by a Mrs. Gribbin story and chapter objectives narrated by her. The book then delves into the subject matter and includes each major theorist's biography. Through Mrs. Gribbin, Lefrançois explains the reason behind the biographies: "Many psychologists think that people's personal lives often profoundly influence their professional lives." (p. 115). Each chapter ends with a section on educational implications, and a main points summary. This reliable format makes information easy to digest.

Theories of Human Learning also features several thoughtful graphics that illustrate key concepts. Notable examples include: a table examining the principal differences between behaviorism and cognitivism (p. 243), a graphic that ranks 10 distinct learning strategies by effectiveness (p. 321), a figure showing Keller's ARCS model of instructional design (p. 363), and a table that lists key words associated with theorists and their theories (p. 443).

The only criticism I had with the book graphics was that some of them were difficult to read due to low contrast between box shading and text. I noticed the online instructor resources website (www.cambridge.org/lefrancois7ed) provides graphic files of these figures. Although I could not review these online resources since only verified instructors can access them, I assume those graphics appear in color and therefore may be more readable. Overall, the content of the figures and tables made up for readability issues.

In *Theories of Human Learning*, Lefrançois assembles a solid collection of information on learning theories. The first and last chapters of the textbook serve as perfect bookends to the wealth of information within. If you want a quick summary for personal enrichment, skip directly to Chapter 12. However, if you want to delve into more detail, read the entire

textbook. Mrs. Gribbin and her cat add a touch of intrigue and fun to what could have been dry academic subject matter.

Jamye Sagan

Jamye Sagan is an STC senior member with more than 15 years of technical communication experience. She is the Pharmacy Communications Advisor for H-E-B in San Antonio, TX. Jamye is active with the Instructional Design & Learning SIG, where she has contributed several Summit session reviews for the SIG's newsletter.

Data Skills for Media Professionals: A Basic Guide

Ken Blake and Jason Reineke. 2020. Wiley Blackwell. [ISBN 978-1-119-11896-1. 210 pages, including index. US$32.95 (soft cover).]
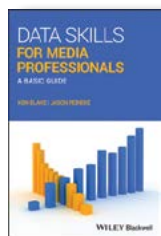
Data Skills for Media Professionals: A Basic Guide walks "word people" through the analysis of publicly available data and suggests stories based on that information. It provides step-by-step instructions and screenshots to help readers follow the examples. Potential errors are also noted, and the reasons behind each step are explained. No knowledge of spreadsheets and only basic computer skills are assumed.

Like a textbook, the examples are meant to be worked through sequentially, building on skills acquired in previous chapters. A companion website includes prepared sample data, but the book also explains where the information originated and how it was prepared. Most of the samples come from Tennessee, Blake and Reineke's home state. However, sources for similar data for other areas are provided.

The authors also discuss how choices made when presenting information can subtly influence readers, for example, if chart axes are scaled to exaggerate a minor numerical difference. However, while the potential problem with data that includes only two gender choices is eventually addressed, the exclusion of unstably housed people from the authors' poll of a sample of people with Tennessee addresses is not mentioned.

Following good instructional practices, each chapter includes a recap of the skills learned. Icons are also both shown and described, helping those with different learning styles better retain the information. Google Sheets and Microsoft Excel are used for the examples,

with explanations why one or the other program is better suited to a task and, when possible, information on how to accomplish the same analysis in the other program.

Tasks range from basic data cleaning and filtering to data visualization in maps, pivot tables and statistical sampling methods, such as chi-square tests and regressions. The final chapter briefly explains certain functions built into spreadsheet programs, the use of Google forms for polling and data adjustment over time, such as for inflation.

All in all, this is a well-executed course in data wrangling for journalists and others interested in discovering patterns and stories behind numbers. The detailed table of contents helps readers to locate a specific skill they might need. However, including the various locations and organizations that served as data sources in the index seems an odd choice, given that most readers' interest in these specifics will likely be limited to having sample data for practicing the skills described in *Data Skills for Media Professionals*.

Barbara Jungwirth

Barbara Jungwirth writes about medical topics (www.bjungwirth.com) and translates medical and technical documents from German into English (www.reliable-translations.com). She has written for print and online media since her high school days and majored in media studies. You can find her on Twitter at @bjungwirthNY.

Digital Reading and Writing in Composition Studies

Mary R. Lamb and Jennifer M. Parrott, eds. 2019. Routledge. [ISBN 978–1-1384-8410-8. 240 pages, including index. US$150.00.]

A fascinating collection on digital reading and writing, this volume features three sections on collaborative reading, teaching writing and reading in digital spaces, and implications and institutional contexts. The variety of engaging perspectives on digital reading and writing within the field of composition range from the familiar—working with Google Docs and rhetorical approaches to reading—to newer developments, like working with specific digital annotation tools. Fortunately, the collection also includes discussion of possible approaches to

assessment. While individual articles may interest experts outside the field, this text is designed for composition scholars and faculty.

The practice-oriented chapters, such as social annotation, Google Docs, and clipping and tagging digital texts, appeal to readers who use digital tools in their scholarship and teaching but are not centered in composition studies. One chapter of interest to many digital rhetoricians and technology scholars is Craig and Davis's "A Difference in Delivery: Reading Classroom Technology Policies." Not only does this chapter review existing policies on device use in specific courses and campuses, but it provides productive, pro-active suggestions on how to develop meaningful policies appropriate for classes and content. Similarly, their suggested activity around having students take stock of the technologies they use (pp. 81–82) can provide a much-needed shared grounding between faculty and students about just what technology is. Additionally, given this chapter's construction, presentation, and arguments—respectful, connecting to key relevant texts, and research—this chapter could easily be used by Centers for Teaching and Learning as well as faculty-generated or faculty-driven discussions about classroom best practices regarding technology. Such powerful articles, ones that can be effectively used in multiple contexts, is not only helpful and inspiring, but they also offer powerful models to graduate students and scholars new to the field.

Bohannon and Greer's "Mapping Students' Information Literacies Against WPA Learning Outcomes in First-Year Writing" shares important, site-specific research with a readily replicable research methodology that—hopefully—will be supported by WPA and/or CCCC and enacted in writing programs around the country. Their research provides direct, specific information about how students conduct research, cite their sources, and then inform possible changes in pedagogy to improve students' skills and understanding of the research process. While their mixed modality approach may not be replicable at all locations, their approach—and findings—offer important insights to faculty who want to understand what their students do and where their skills rest. And they provide a model on how to replicate their research.

The editors have assembled articles that can support and assist students, teachers, scholars, and administrations working with digital reading and writing
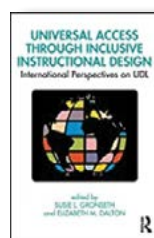
within composition. Given the content, this book would have far greater readership if it were more affordable.

Gregory Zobel

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Universal Access Through Inclusive Instructional Design: International Perspectives on UDL

Universal Access Through Inclusive Instructional Design: International Perspectives on UDL (Universal Design Learning) presents an engaging, robust selection of 47 instructional design articles. These chapters' authors come from many countries and fields as well as diverse academic positions. This wide variety of articles is generative and helpful for several reasons. First, the eight themed sections that address topics like inclusive design, design cases, and future directions make the book accessible to multiple audiences as well as offers great reading options for practitioners, students, and faculty working in related areas like instructional or curriculum design, accessibility, diversity, and inclusion.

Second, these snapshot chapters range from a few pages to less than eleven pages. Such brevity offers readers access to multiple contexts within each chapter. Additionally, this provides different introductory views to important topics. For faculty teaching related content, these chapters are long enough to provide important points of exposure that can fit into the content area without completely redirecting their students or readers away from their course learning goals. Finally, for those teaching workshops, these short chapters provide quickly readable and accessible content without overloading participants.

One highlight is Chapter 26, Bastedo and Swenson's "General Accessibility Guidelines for Online Course Content Creation." This concise, tightly organized chapter makes for great introductory reading for those new to accessibility. It also offers a standard against which to compare existing accessibility guidelines for online learning programs and Centers for

Teaching and Learning. Strangely, the chapter omits video and audio's role in online learning as well as how to make media accessible—they do mention a tool for helping identify YouTube captions that have videos (p. 212), but this is not enough. Fortunately, there is a snapshot, chapter 28 by Rogers, that is about using the YouTube automated captioning tool. Similarly, Chapter 37 by Bar and Shrieber have a great example on using Legos to teach educators about UDL, but they also completely omit closed captioning in making content accessible. This is a serious oversight given the rise of multi-media, video, and accessibility in online learning.

The captioning gap can be seen throughout the collection. Bauder, Cooper, and Simmons do mention captioning, but it only appears to be presented in the role of having students caption to "improve listening skills/spelling skills" (p. 149). Strangely, the index places captioning, a critical part of accessibility and an underlying component of UDL, a subhead under video.

Focusing on captioning and accessibility in this review is meant to underscore how complex UDL is but also how integral accessibility, especially accessible video. When authors discuss accessible video, especially in a UDL context, it's prudent to at least acknowledge captioning. Despite this shortfall, this collection is well worth acquiring. It is clearly usable, either in total or in excerpts, in numerous teaching, training, and professionalizing contexts.

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